DOCUMENT RESUME

ED 254 033 EC 171 742

AUTHOR	Weissman, Carol Sacker; And Others
TITLE	The Impact of Early Intervention, PL 94-142 and Other Factors on Mainstreaming. Final Report, 3/1/83-4/30/84.
INSTITUTION	Nassau County Board of Cooperative Educational Services, Westbury, N.Y.
SPONS AGENCY	Special Education Programs (ED/OSERS), Washington, DC.
PUB DATE	30 Jul 84
GRANT	G008300028
NOTE	125p.; Submitted by the Office of Institutional Planning and Research.
PUB TYPE	Reports - Research/Technical (143)
EDRS PRICE	MF01/PC05 Plus Postage.
DESCRIPTORS	*Disabilities; Elementary Education; Followup Studies; *Intervention; *Mainstreaming; Preschool Education; Student Adjustment; Success
IDENTIFIERS	*Early Intervention; Education for All Handicapped Children Act

ABSTRACT

Two separate studies were conducted to determine what factors contributed to and predicted mainstreaming of handicapped youngsters, and to study the impact of early intervention and P.L. 94-142 (the Education for All Handicapped Children Act) on mainstreaming. In Study A, 434 elementary-level special education student records were examined, and subsequent student placement 1 year later was recorded. Current IQ, data on the family's stability, and a rating of the student's hostile behavior, were the variables that tended to discriminate the most between handicapped youngsters who were placed in less restrictive educational settings and those who remained in a segregated special education school. Study B examined the impact of early intervention (no preschool, regular school, special education preschool) on educational placement in the mainstream continuum for 281 handicapped children, aged 5-8, and compared the amount and type of mainstreaming before and after the implementation of P.L. 94-142. No significant trends were found in either case. However, higher socioeconomic status of parents, regardless of type of early intevention, seemed to indicate a trend toward mainstreaming after the implementation of P.L. 94-142. (JW)

****

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

****

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

ED254033

Board of Cooperative Educational Services of Nassau County
Valentines Road and The Plain Road
Westbury, NY 11590

FINAL REPORT

School Based Research;
Research in Education of the Handicapped
Department of Education

THE IMPACT OF EARLY INTERVENTION, PL 94-142 AND OTHER FACTORS ON MAINSTREAMING

3/1/83 - 4/30/84

Grant # G008300028
CDFA # 84.023J

Submitted by:

The Office of Institutional Planning
and Research

Philip Archer, Project Coordinator
Diane E. Liebert, Project Manager
Carol Sacker Weissman, Senior Researcher
Estelle Shaw, Researcher
Donald Schilley, Researcher

Under the Supervision of:

Charles W. Colangelo,
Assistant to the Superintendent

EC171742

July 30, 1984

ABSTRACT

The purpose of this project was to determine what factors contributed to and predicted mainstreaming of handicapped youngsters and to study the impact of early intervention and PL 94-142 on mainstreaming. For this purpose, two separate studies were conducted.

Study A sought to determine what factors contributed significantly and predicted the mainstreaming of handicapped children. Specifically, it examined the characteristics of children who returned to the mainstream and whether or not they differed from children who remained in a special education school regarding: type of handicap, age, sex, ethnicity, parent SES, status of family and other family characteristics, academic tests, school behavior, age of special education intervention, and length of time in special education.

Study B was a longitudinal study of 300 children who were used to determine the impact of PL 94-142 and early intervention on mainstreaming. Students ages 5 to 8 who were enrolled in BOCES at three different time periods (1974, 1978 and 1982) were divided into three comparison groups; (those with early intervention special education at ages 3 or 4 those with normal preschool experience, and those without early intervention) to determine the impact on educational placement and type of mainstreaming. In addition, the study compared the amount and type of mainstreaming before the implementation of PL 94-142 and afterwards. The specific objectives of the two studies were as follows:

Study A

Objective 1: To determine what factors contributed significantly and predicted educational placement (mainstreaming) of handicapped children. A discriminant analysis using a specific set of discriminators was performed to distinguish youngsters who were mainstreamed from those who remained in a segregated special education school. Separate discriminant analyses were also performed for different types of handicapping conditions.

Study B

Objective 2: To determine if handicapped children who received early intervention (special education at ages 3 or 4) differed from handicapped children who did not receive special education until ages 5 through 8.

Objective 3: To determine if handicapped children who received early intervention (special education at ages 3 or 4) were more likely to be later mainstreamed or placed in a less restrictive setting than handicapped children who did not receive special education until ages 5 through 8.

Objective 4: To determine if handicapped children who received early intervention were mainstreamed at an earlier age than children who did not receive special education until ages 5 through 8.

Objective 5: To determine if more handicapped children in a special education school had been mainstreamed and received early intervention after PL 94-142 was implemented than before this act, and whether the act had the same or different impact on children with different types of handicapping conditions.

This final report addresses all of these objectives. Volume I contains all information pertaining to Study A. Volume II contains all information pertaining to Study B.

VOLUME I

STUDY A

FACTORS RELATED TO MAINSTREAMING

Prepared by:

Carol Sacker Weissman
Senior Researcher

ABSTRACT

STUDY A

This study identified criteria which would discriminate between handicapped children who would be mainstreamed versus those who would remain in special education schools. The records of all the children (434) enrolled in the Nassau County Board of Cooperative Educational Services (BOCES) special education elementary school in 1982-1983 were examined for this purpose. A comprehensive set of student background achievement and behavioral data was collected from these records. All of the children were followed up in the fall of the 1983-84 school year to determine if they had been recommended to remain in their present special education school or to be returned to a regular school in a self-contained or mainstreamed setting. Discriminant analyses were then performed on the data derived from the student records in order to predict student placement.

In summary, these results indicated that the variables which tended to discriminate the most between handicapped youngsters who were returned to district in less restrictive educational settings and those who remained in a segregated special education school were primarily the youngster's current IQ, followed by the family's stability and a rating of the youngster's hostile behavior. Therefore, handicapped youngsters with higher IQs, greater family intactness and showing fewer signs of hostile behavior were more likely to return to the district in less restrictive educational settings.

For two specific handicapped groups, the multiply handicapped and the speech impaired, only one variable, Current IQ, tended to discriminate between those youngsters who returned to district in less restrictive settings and those who remained in the special education school. More

specifically, IQ discriminated to a slightly greater degree between these groups with the speech impaired than with the multiply handicapped subsample.

Though the variables of Current IQ, Family Structure and Hostile Behavior played a statistically significant role in discriminating among the educational placement groups, it appeared that their degree of discriminating power was relatively low. Perhaps if the sample of youngsters who were returned to district had been larger, the originally examined variables may have produced a higher degree of discrimination among the groups.

Further studies which examine factors related to mainstreaming should consider using larger samples when looking at specific handicapped groups. In addition, other variables such as degree of parent advocacy, severity of the youngster's handicapping condition as well as other relevant factors should also be examined.

TABLE OF CONTENTS

CHAPTER I

INTRODUCTION AND RELATED LITERATURE: CRITERIA FOR MAINSTREAMING 1
RELATED LITERATURE: ENTRY CRITERIA TO SPECIAL EDUCATION 2
RELATED LITERATURE: EXIT CRITERIA FOR MAINSTREAMING PLACEMENT DECISIONS OF THE HANDICAPPED 4
STATEMENT OF THE PROBLEM FOR STUDY A 11
HYPOTHESES 13

CHAPTER II

METHOD

Subjects 14
Design 14
Instruments 15
Data Recording Instrument 15
The School Behavior Checklist (SBCL) 15
The Metropolitan Achievement Test (MAT) 17
The Wechsler Intelligence Scale for Children-Revised (WISC-R) 17
Procedure 18

CHAPTER III

RESULTS 19
DATA DERIVED FROM STUDENT RECORDS 20
Descriptive Statistics of Potential Discriminators 20
Factor Analysis of Potential Discriminating Variables 20
Discriminant Analysis 25
Stepwise Discriminant Analysis With Two Placement Groups With The Entire Sample 29
Stepwise Discriminant Analysis With Three Placement Groups With The Entire Sample 31
Stepwise Discriminant Analysis With Two Placement Groups With The Multiply Handicapped Subsample 35
Stepwise Discriminant Analysis With Two Placement Groups With the Speech Impaired Subsample 37
Stepwise Discriminant Analysis With Two Placement Groups With the Emotionally Disturbed Subsample 40

CHAPTER IV

DISCUSSION 41
Review of the Hypotheses 42
Summary and Conclusions 49

REFERENCES 50

APPENDICES

A - CATEGORIES OF HANDICAPPING CONDITIONS 53
B - PREDICTOR VARIABLES 57
C - DESCRIPTION OF NEW YORK STATE EDUCATION DEPARTMENT CONTINUUM OF PLACEMENT ALTERNATIVES FOR THE HANDICAPPED 60
D - DATA RECORDING INSTRUMENT 63
E - SCHOOL BEHAVIOR CHECKLIST 70

LIST OF TABLES

1 - Means, Standard Deviations and Valid Number of Cases for Continuous Variables Derived From Student Records 21
2 - Frequencies and Percents for Categorical Variables Derived from Student Records 22
3 - Major Factors for the Sample 26
4 - Group Means and Standard Deviations for each Selected Potential Discriminating Variable for each of the two Placement Groups with the Entire Sample 29
5 - Classification Results for Two Placement Groups With the Entire Sample 31
6 - Group Means and Standard Deviations for each Selected Potential Discriminating Variable for Each of the Three Placement Groups with the Entire Sample 32
7 - Classification Results for Three Placement Groups for the Entire Sample 34
8 - Group Means and Standard Deviations for each selected potential Discriminating Variable for each of the Two Placement Groups With the Multiply Handicapped Subsample 35
9 - Classification Results for Two Placement Groups With the Multiply Handicapped Subsample 37
10 - Group Means and Standard Deviations for each Selected Potential Discriminating Variable for each of the Two Placement Groups with the Speech Impaired Subsample 38
11 - Classification Results for Two Placement Groups With the Speech Impaired Subsample 39
12 - Group Means and Standard Deviations for each Selected Potential Discriminating Variable for each of the Two Placement Groups with the Emotionally Disturbed Subsample 40

CHAPTER I

INTRODUCTION AND RELATED LITERATURE: CRITERIA FOR MAINSTREAMING

It is the policy of the United States that the purpose of the public schools is to provide all children with the opportunity for a free, public and appropriate education (Abeson, Bolick & Hass, 1977). The passage of PL 94-142, the Education For All Handicapped Children Act of 1975, is an outgrowth of the civil rights movement and a culmination of legislation and litigation designed to insure the rights of all children to receive a free, public education under the equal protection clause of the fourteenth amendment to the Constitution. PL 94-142 calls for procedures which require the schools to consider all program alternatives and to select the setting for each child that is least restrictive. This provision assumes that a continuum of services is available for each child which emphasizes "... special education and related services designed to meet their unique needs..." (PL 94-142, Federal Register, Sec. 3C, 1975).

The concept of least restrictive environment and mainstreaming are often interpreted as being synonymous; however, Anderson, Martinez and Rich (1980) have stressed the need for definitions of terms in order to resolve the confusion. Mainstreaming is presented as a descriptive concept of educating handicapped children with their normal peers whenever this is appropriate. Least restrictive environment is defined as a program placement concept wherein handicapped children are educated in environments as normal as possible, with mainstreaming placement in regular classes considered the most normal or least restrictive placement (Anderson, Martinez & Rich, 1980).

The notion of least restrictive alternatives assumes that a continuum of services exists, and PL 94-142 mandates that the alternatives are considered for each child. Several authors have proposed an operationalized continuum of educational environments ordered by the least restrictive concept (Chiba & Semmel, 1977; Deno, 1970; Lowenbraun & Affleck, 1978; Reynolds, 1962; Reynolds & Birch, 1977). On a nominal scale from the least restrictive to the most restrictive, these alternatives include regular classrooms and self-contained classrooms in the regular school to community-based residential institutions. In addition, the New York State Education Department in 1982 set forth a continuum of placements for the handicapped which operationalizes a full range of alternative administrative and instructional options being used in the State.

The Education for All Handicapped Children Act of 1975 has also mandated special education placements based on multidisciplinary and multifaceted assessments (LaVor, 1977). This stress on multifactored and multisource assessment of the handicapped has been reflected in the more recent research related to entry placement criteria for the handicapped into special classes and exit mainstreaming placement criteria for the handicapped into less restrictive educational settings.

RELATED LITERATURE: ENTRY CRITERIA TO SPECIAL EDUCATION

Investigations pertaining to entry criteria focused on those factors which appeared to be frequently available for children referred to special class placement (Hannaford, Simon & Ellis, 1975). In addition, factors emanating from three other sources were examined: those typically found in state education agency policies governing special education; those identified in the professional literature for educational placement; and those identified by the Office of Civil Rights as being important in assessing minority groups (Matuszek & Oakland, 1979). Drawing from these four sources, the following variables were identified for study of entry placement decisions: age, sex, ethnicity, socioeconomic status, intelligence, achievement test scores, classroom achievement, teacher referral information, number of grade retentions, habitat, behavioral characteristics, language characteristics, self-concept, interpersonal relationships, anxiety at home, anxiety at school, and values of parents. Additional factors examined in the latest study on entry criteria included: an interview with the child, visual-motor ability, neurological exam information and income level (Knoff, 1983).

The choice of particular entry level criteria in making special class placement decisions appears to be moving away from using IQ as the single determining factor. Hannaford, Simon and Ellis (1975) as well as Matuszek and Oakland (1979) found that IQ and test achievement, along with certain behavioral and/or emotional indicators were most critical in entry placement decisions. Knoff (1983) noted that the most important potential determinants in making special class entry placement decisions to be: assessments in language and interviews with the child, along with certain behavioral and/or emotional indicators. Furthermore, Knoff (1983) reported that IQ was considered to be of less importance than eight other factors in the making of entry placement decisions.

RELATED LITERATURE: EXIT CRITERIA FOR MAINSTREAMING PLACEMENT DECISIONS OF THE HANDICAPPED

The studies mentioned in the previous section focused on criteria for entry placement decisions of the handicapped into special education classes. Few studies have been devoted to the determination of exit criteria for the handicapped from special education classes to less restrictive placements. This section examines those exit criteria suggested by clinical experience and research to date, which are related to mainstreaming placement decisions of handicapped youngsters.

Based on clinical experience, Forness (1979) developed certain criteria upon which to make decisions of whether or not to mainstream a given handicapped child. The first of his criterion related to the age of the child and the timing of the referral. Forness explicated that the earlier the mainstreaming decision is made the more beneficial to the child. At this earlier point, the interruption of special interventions provided in the regular classroom context is less evident to other classmates than when classroom routines and patterns of social relationships are already well established.

The second criterion designated by Forness refers to the degree of severity of the child's problem and its specificity to the school situation. Mildly handicapping conditions (behavior problems, learning disabilities, mild mental retardation and speech handicaps) have been more readily considered as appropriate for mainstreaming into the regular classroom than are autism, severe levels of retardation, aphasia and multiple handicapping conditions.

The potential of the youngster to form social relationships was also set forth by Forness as an important criterion in mainstreaming decisions. Furthermore, familial support was considered critical. Without the encouragement of other family members, it was felt that the handicapped youngster would be more vulnerable to secondary emotional reactions and social isolation within a regular classroom setting.

Palmer (1980), from his clinical and research experience, focused on the consideration of academic skill attainment as well as the functional characteristics of the handicapped child prior to making mainstreaming placement decisions. He discouraged the use of intelligence and achievement test scores in reintegration placement decisions, since correlation of these scores with school achievement remained relatively low for handicapped youngsters.

Palmer and Hewett (1973) conducted a study to examine the relationship of demographic, IQ, achievement, and teacher ratings of emotionally handicapped and mildly retarded pupils with the length of time these pupils were reintegrated and were maintained in regular classrooms. They found that the actual length of time these pupils were maintained in a regular class program correlated significantly with the sex of the pupil. Traditional assessment measures of IQ and achievement were not significantly correlated with the dependent variable length of time reintegrated into a regular classroom. In fact, of the data collected, full-scale IQ scores had one of the lowest correlations with the length of time a pupil was mainstreamed into a regular classroom.

Other clinicians also regard examination of functional characteristics of the handicapped to be important when making mainstreaming placement decisions. Such characteristics which were mentioned in the literature as fostering or exacerbating learning problems in potential mainstreamed settings included: impulsivity (Keogh & Donlon, 1972; Meisser, 1976), attentional problems (Keogh & Margolis, 1976; Tarver & Hallhan, 1974; Turnure, 1970), temperamental behavior patterns (Hall & Keogh, 1978; Thomas, Chess, & Birch, 1968), and motivational problems (Keogh, Cahill, & MacMillan, 1972; MacMillan & Cauffeil, 1977; Zigler, 1966).

Wilkes, Bireley and Schultz (1979) attempted to define specific criteria that could be used as guidelines in determining the readiness of learning disabled youngsters for mainstreaming. They studied the opinions of four groups of professional educators: learning disabilities supervisors, school psychologists, learning disabilities teachers, and regular class teachers from school districts where learning disabilities programs had been well-established and where mainstreaming was an accepted part of the program. The criteria used in this study represented refinements of a larger list generated by the educational consultant for learning disabilities and behavioral disorders from the state in which the study was conducted as well as from other learning disabilities and psycholinguistic evaluation checklists. The list of criteria contained statements concerned with the child's academic work, behavior and placement process.

All four groups agreed on the importance of the need for a team decision on pupil mainstreaming placements. Moreover, results indicated that the learning disabled child's behavior in the classroom had a greater bearing on the decision to reintegrate than did the student's academic performance.

Bullard (1982) investigated the mainstreaming practices and decision-making processes used by elementary school personnel in an urban school system to determine whether learning disabled students who were assigned to academic classes in the mainstream differed in certain academic and behavioral characteristics from learning disabled students who were not mainstreamed. Participating in this study were learning disabilities teachers, elementary school principals, mainstreamed learning disabled students, and nonmainstreamed learning disabled students.

This study was conducted in two phases. The first phase incorporated the selection and assessment of a sample of mainstreamed and nonmainstreamed learning disabled students in selected target schools. Three instruments were used to assess the academic and behavioral characteristics of these sample students: The Ginn Reading 360 Initial Screening Test; The McMilligan Mathematics Placement Tests; and The Walker Problem Behavior Identification Checklist. Math and reading scores of mainstreamed students were compared with those of the total student group and with those of nonmainstreamed peers in each of the target classrooms. The second phase consisted of an examination of mainstreaming decision-making processes through the use of a structured interview. This interview was administered to school personnel in target schools who were responsible for making mainstreaming decisions which involved students in the sample.

Results of these analyses revealed very little difference between mainstreamed and nonmainstreamed learning disabled students in the subject areas of math and reading. Results of the behavior checklist data revealed no marked behavioral differences between mainstreamed and nonmainstreamed students. On the other hand, responses of principals and teachers in the second phase of the study indicated that decisions to mainstream were based on both academic and behavioral characteristics, though the data in Phase I of the same study did not seem to support these perceptions.

Algozzine, Whorton and Reid (1979) chose to identify a linear composite of scores whose application would result in the most accurate separation between mentally retarded children in regular and special class placements. A second purpose of their investigation was to determine the extent to which that composite accurately predicted class placement for those mentally retarded youngsters.

Class placement (regular or special) was predicted from IQ, Adaptive Behavior Score (ABS) data, achievement discrepancies in reading, spelling and arithmetic (the discrepancy between each child's actual Wide Range Achievement Test (WRAT) scores and expected achievement level), and grade placement. The IQ and ABS were considered important based upon their salience in identification practices; the discrepancies were thought to represent a measure of the extent to which a child had profited from schooling, and the grade placement was thought to be a useful measure of general school experience.

To ascertain the extent to which these retarded children in regular classes could be differentiated from retarded children in special classes, a discriminant function analysis was performed. Since there were only two placement groups, one discriminant function was derived. The obtained linear composite depicted ABS, spelling discrepancy, IQ, and reading discrepancy to have the most significant weights in the prediction of placement, with approximately 42% of the variance in placement accounted for by the obtained composite. Furthermore, 83% of the children were correctly placed by the linear composite obtained by the discriminant function analysis.

Clinical experience has highlighted the following factors as being critical to the mainstreaming of handicapped youngsters: age of the child, length of time in special class, degree of severity of the handicapping condition, potential to form social relationships, family support, academic skills, and functional characteristics. Research related to mainstreaming criteria have focused on a more limited set of variables which overlap somewhat with those factors derived from clinical experience, and include: IQ, academic achievement and student behavorial characteristics.

Researchers have only begun to empirically investigate exit criteria related to mainstreaming decisions. Moreover, this research has been conducted on only two handicapped groups, the learning disabled and the mentally retarded. Furthermore, a limited set of criteria have been utilized for these studies. Lastly, this research has focused on the identification of placement criteria relative to reentry into a mainstreamed regular class placement and not across the continuum of mainstreamed placement options available to the handicapped.

Study A will examine a comprehensive set of exit criteria, emanating from the literature, for children with different handicapping conditions and for placement across the continuum of mainstreaming options. The results should have significance for the complex assessment and disposition processes that influence educational programming efforts for handicapped youngsters. It should also have significance for the continuous reassessment and placement of handicapped children especially regarding exit from special education settings.

STATEMENT OF THE PROBLEM FOR STUDY A

The purpose of this study is to identify those exit criteria which are important to the reentry of all groups of handicapped youngsters from a special education facility into the continuum of less restrictive placement options within local school districts. The exploratory nature of the proposed study reflects that, to the best of the author's knowledge, there appears to have been no prior research addressing the relationship of a comprehensive set of student characteristics to the placement of different groups of handicapped students in a continuum of less restrictive placement options within local school districts.

Although several investigators (Algozzine, Whorton, & Reid, 1979; Bullard, 1982; Wilkes, Bireley, & Schultz, 1979) have reported on a limited set of criteria for mainstreaming mentally retarded and learning disabled students into regular classes from special classes, none have specifically focused on the relative importance of a more comprehensive set of exit criteria for all of the different handicapped groups from a special education facility into a continuum of less restrictive placement options within local school districts. Furthermore, though Bullard (1982) examined specific criteria specified by teachers and principals for making mainstreaming decisions, the set of criteria was limited to academic and behavioral characteristics and to one handicapped group, the learning disabled. Therefore, the examination of criteria deemed necessary by school personnel in making mainstreaming decisions for all groups of handicapped students also appears to be warranted.

The present study will attempt to identify criteria suggested by the literature whose application would result in the most accurate separation among children with different handicapping conditions into the continuum of mainstreaming program options from a special education facility. It is hoped that through the identification of an extensive linear composite of criteria predictive of exit placement decisions for each handicapped group, that the complex assessment and disposition processes that influence educational programming efforts for the handicapped into the mainstream could be made more effective.

HYPOTHESES

Study A will present information related to two main areas:

Hypothesis 1:

It is predicted that there will be differences in placement criteria distinguishing those handicapped youngsters remaining in a segregated special education school from those returned to local school district educational settings.

Hypothesis 2:

It is predicted that there will be differences in terms of criteria for distinguishing placements among different handicapped groups. Although there will be a limited set of common criteria across all handicapped conditions, there will be different patterns and weights of criteria evidenced for each specific group.

CHAPTER II

METHOD

Subjects

The subjects of study A consisted of the total number of children enrolled in the Nassau County Board of Cooperative Educational Services (BOCES) special education elementary school in school year 1982-83, which totaled 434. The Nassau BOCES elementary program serves handicapped children from all of the 56 school districts in Nassau County ranging in age from 5-12 years old with physical, emotional and mental handicaps (see Appendix A for complete descriptions of categories of handicapping conditions). It does not serve the severely mentally retarded, or the severely vision and hearing impaired or cerebral palsied youngsters, as other BOCES schools serve these special populations.

Design

Through the use of discriminant function analyses, with a relevant set of discriminating variables as the independent variables and educational placement options as the criterion (dependent) variables, linear composites of the discriminating variables which most accurately determine specific mainstreaming placement alternatives were formulated.

The discriminating variables consisted of a set of background criteria emanating from the literature and retrievable from student records. In addition, child behavior ratings, achievement test scores and intelligence quotients were used as discriminators (see Appendix B for the entire set of discriminators). The major dependent variables were the educational placement options, namely: regular class program placement; regular class program placement with related services; resource room program; special class program for 50% of the school day; special classes within the local school districts; special classes within BOCES, and residential placement. (See Appendix C for a description of these placement options included in the New York State continuum of alternative placements for the handicapped).

Instruments

The instruments used for this study included: a data recording instrument and a teacher checklist developed by the author as well as the School Behavior Checklist, Metropolitan Achievement Test and the Wechsler Intelligence Scale for Children-Revised. Each is described below.

Data Recording Instrument

All predictor and criterion data relevant to the purposes of this study were recorded for all subjects on a data recording instrument developed by the author (see Appendix D).

The School Behavior Checklist (SBCL)

The School Behavior Checklist was developed by Miller (1972) and was based on the work of Ross, Lacey and Parton (1965). The SBCL was designed for children aged 5 through 12. The test contains 96 items for rating socially and emotionally deviant behavior in the classroom (see Appendix F).

Miller (1972) identified six factors based on a factor analysis of a general population sample of 5,373 boys and girls in grades kindergarten through six. The six factor scales are: (a) Low Need Achievement, (b) Aggression, (c) Anxiety, (d) Academic Disability, (e) Hostile Isolation, and (f) Extroversion. A seventh scale, identified as Total Disability, consists of 95 of the 96 (except no. 10) items on the SBCL.

The SBCL was chosen because of its carefully documented reliability and objectivity. The standardization of the test included an extensive normative sample and great care was taken to make certain that the general school population was represented. According to Miller, it is reasonable to assume that children who rated one and one-half standard deviations above the mean of any of the scales (except Extraversion) would be candidates for remedial attention. In addition, both split-half and test-retest reliabilities were reported and reached acceptable limits (reliabilities ranged from .70 to .90 for all scales, except for Hostile Isolation which has a .40 split-half and test-retest reliability).

The Metropolitan Achievement Test (MAT)

The 1978 edition of the MAT published by the Psychological Corporation was used to measure achievement in reading and mathematics for all children enrolled in the BOCES elementary school. The Metropolitan Achievement Tests were designed by Prescott, Balow, Hogan and Farr in 1978, to evaluate what was being taught in the schools at that time. The content development for the tests were based on extensive analyses of current curriculum materials. Teachers at the BOCES elementary school chose the MAT since its objectives and items adequately covered the curriculum areas taught in their school. Therefore, the content validity seemed well-matched with the curriculum areas the test was intended to measure.

Kuder-Richardson Formula 20 reliability estimates fall within the .90 and .95 ranges for reading and mathematics, respectively. Moreover, the standardization sample was selected to provide a set of norms which would accurately reflect national levels of achievement. Over 5,500,000 students were tested in the standardization programs for all components of the series.

The Wechsler Intelligence Scale for Children-Revised (WISC-R)

The WISC-R consists of the same twelve tests (six on the performance scale and six on the verbal scale) that constituted the 1949 WISC with certain modifications. These subtests include: Picture Completion, Picture Arrangement, Block Design, Object Assembly, Coding, Mazes, Information, Similarities, Arithmetic, Vocabulary, Comprehension, and Digit Span. The WISC-R norms were derived from groups representative of the United States population of children taken from the 1979 United States census. The range of the scale is from age 6 years 0 months through 16 years 11 months.

Procedure

A comprehensive set of student background data was collected by the author for each student enrolled in the Nassau BOCES elementary school program within school year 1982-83. This information was retrieved from student records through the use of data recording forms, described above. Other relevant information pertaining to student behaviors and achievement were gotten from teacher administered behavioral observation ratings and achievement tests in reading and mathematics given in the late spring of the same school year. These latter achievement test scores were then recorded by the author onto the record reading forms.

To establish the criterion for this study, the author then followed up on all the children in the fall of the 1983-84 school year to determine if they had been recommended to remain in their present setting; to be placed in another special education school or institution; or to be mainstreamed into a regular school. If the child had been mainstreamed, his/her home district was then contacted by the author by phone and letter, if necessary, to determine the school that the child was attending and the degree of mainstreaming. Moreover, in order to assure access of this information for those students that had returned to their local districts, a letter seeking parental permission was sent to each of the 56 superintendents prior to making the follow-up phone calls.

CHAPTER III

RESULTS

The problem under investigation was that of examining whether measures that were readily available to school personnel could be used to determine the later educational placements of the handicapped from a special education elementary school to the local school district. Four-hundred thirty-four youngsters were followed after placement decisions were made in order to discern whether ddetermination of placement was possible from certain relevant data.

The results of Study A are presented in one major section consisting of several subsections. Within the major section which utilizes data derived from student records, descriptive statistics of the entire set of potential dsicriminating variables are prezented. Results of factor analysis of this entire set of potential discriminating variables are then reported. These factor analytic results were used to determine the specific set of potential discriminating variables employed in the discriminant analyses with two categorical placement groups (those that remained in the special education school and those that were returned to district) and with three categorical placement groups (those that remained in the special education school, those that returned to district in self-contained classes and those that returned to district mainstreamed) for the entire sample which are reported in the next two subsections. Results of discriminant analyses with the same specific set of discriminating variables with two categorical placement groups (those that remained in the special education school and those that returned to district) for each of three handicapped groups (multiply handicapped, speech impaired and emotionally disturbed) are presented in the final subsections.

DATA DERIVED FROM STUDENT RECORDS

Descriptive Statistics of Potential Discriminators

Table 1 shows the means, standard deviations and number of valid cases for all the potential continuous discriminating variables derived from student records. Table 2 shows the frequencies and percents for all the potential categorical discriminating variables derived from student records.

Factor Analysis of Potential Discriminating Variables

Factor analytic techniques were used on the aforementioned variables to see whether some underlying pattern of relationships existed such that data could be reduced to a smaller set of discriminators prior to the discriminant analyses. All categorical variables that were not ordinal in nature (family structure, primary language and ethnicity) were collapsed into two categories for this analysis. An iterative principle-component solution was employed to carry out the factor analyses, using estimates of communalities in the main diagonal. All factors with eigenvalues $\geq$ 1.00 were retained, and an orthogonal rotation to a Kaiser normalized varimax criterion was performed.

It should be noted that pairwise deletion was used to process missing data prior to the factor analyses. Under pairwise deletion, a case was omitted from the computation of a given correlation coefficient if the value of either of the variables being considered was missing. A case was therefore included in the computation of all simple correlation coefficients for which it had complete data. Pairwise deletion had the advantage of utilizing as much data as possible

TABLE 1

MEANS, STANDARD DEVIATIONS AND VALID NUMBER OF CASES FOR CONTINUOUS VARIABLES DERIVED FROM STUDENT RECORDS

VARIBALE	MEAN	SD	VALID N
Student Background Information			
District Valuation	131,707.19	45,398.71	432
Current Age (in months)	106.35	25.21	434
Time in BOCES Sp. Ed. (in months)	22.41	17.00	434
Time in all Sp. Ed. not incl. presch. (in months)	26.28	19.32	434
Time in all Sp. Ed. incl. presch. (in months)	32.52	22.36	338
Time in presch. (in months)	9.19	13.27	338
Family Background Information			
Number of Siblings	1.70	1.45	420
Number of Handicapped Siblings	.23	.57	423
Student Behavior, Achievement and IQ Information			
Low Need for Achievement	57.01	8.27	434
Agressive Behavior	63.19	15.42	434
Anxiety Behavior	57.79	11.97	434
Academic Disabilities	64.58	9.18	434
Hostile Behavior	53.10	9.77	434
Extroversion Sociability	44.12	16.01	434
Arithmetic Achievement	1.65	1.85	375
Reading Achievement	1.31	1.72	362
Current IQ	78.30	19.16	398

TABLE 2

FREQUENCIES AND PERCENTS FOR CATEGORICAL VARIABLES DERIVED FROM STUDENT RECORDS

Student Background Information

	FREQUENCY	PERCENT
Sex		
Male	322	74.2
Female	112	25.8
Valid N Cases	434	100.0
Preschool Experience		
Not including preschool	188	43.6
Regular preschool	115	26.7
Special Ed. preschool	89	20.6
BOCES Sp. Ed. preschool	39	9.0
Valid N Cases	431	100.0
Type of Placement Prior to Entry Into BOCES		
District Regular Class	87	20.0
Private School Regular Class	19	4.4
District Special Ed. Class	68	15.7
Private Day School Special Ed.	42	9.7
Institution or More Restric. Setting	2	.5
None	216	49.8
Valid N Cases	434	100.0

Family Background Information

	FREQUENCY	PERCENT
Mother's Education		
No schooling	0	0.0
K - 3rd	0	0.0
4 - 6th	2	.6
7 - 8th	6	1.8
high school incomplete	9	2.7
high school complete	48	14.2
college incomplete	175	51.6
college complete	45	13.3
post-college experience	54	15.9
Valid N Cases	339	100.0

TABLE 2, continued

FREQUENCIES AND PERCENTS FOR CATEGORICAL VARIABLES DERIVED FROM STUDENT RECORDS

Family Background Information

	FREQUENCY	PERCENT
Father's Education		
No Schooling	0	0.0
K - 3rd	0	0.0
4 - 6th	2	.7
7 - 8th	12	4.0
high school incomplete	5	1.7
high school complete	36	11.9
college incomplete	114	37.7
college complete	49	16.2
post-college experience	84	27.8
Valid N Cases	302	100.0
Mother's Occupation		
laborer	3	.8
service worker	42	11.3
operator	9	2.4
craftsman, foreman	1	.3
sales, clerical	43	11.6
proprietor, manager and official	5	1.3
professional, semi-professional	41	11.1
housewife	227	61.2
Valid N Cases	371	100.0
Father's Occupation		
laborer	19	8.7
service worker	60	17.9
operator	37	11.0
craftsman, foreman	68	20.3
sales, clerical	26	7.8
proprietor, manager and official	55	16.4
professional, semi-professional	60	17.9
Valid N Cases	335	100.0

TABLE 2, continued

FREQUENCIES AND PERCENTS FOR CATEGORICAL VARIABLES DERIVED FROM STUDENT RECORDS

Family Background Information

	FREQUENCY	PERCENT
Family Structure		
Intact	262	61.8
Single Parent	126	29.7
Foster Care	18	4.2
Other	18	4.2
Valid N Cases	424	100.0
Primary Language		
English	411	95.1
Spanish	9	2.1
Other	9	2.1
Nonverbal	3	.7
Valid N Cases	430	100.0
Ethnicity		
White	319	74.2
Black	87	20.2
Hispanic	14	3.3
Other	10	2.3
Valid N Cases	430	100.0
Handicapping Condition		
Autistic	19	4.4
Emotionally Disturbed	144	33.2
Learning Disabled	54	12.4
Mentally Retarded	26	6.0
Deaf	0	0.0
Hard-of-Hearing	0	0.0
Speech Impaired	65	15.0
Visually Impaired	0	0.0
Orthopedically Handicapped	19	4.4
Other Health Impaired	3	.7
Multiply Handicapped	104	24.0
Valid N Cases	434	100.0

in the computation of each of the simple coefficients prior to factor analysis. Since the number of cases in this analysis was large, it was concluded that missing data occurred at random and did not significantly skew the analysis in any way.

Table 3 presents the major factors in the varimax-rotated factor matrix. Factors accounting for at least 5% of the variance were included in the table. Item loadings of ± .3 or greater within a given factor were considered as appropriate in interpreting that factor. Using this criterion, six factors emerged for the sample.

Factors I and II accounted for the larger percentages of variances, 13% and 12% respectively, while Factors III, IV, V and VI accounted for 9.6%, 7.5%, 6.2% and 5.5% respectively of the variance. These factors (I - VI) were labeled respectively: Age and Time in Special Education, Achievement and Aptitude, Socioeconomic Influence, Preschool Experience, Covert Negative Behavior and Cultural Influence.

Discriminant Analysis

Since the main purpose of the study was to determine those potential discriminating variables that best distinguished among educational placement groups, discriminant analysis was computed. The mathematical objective of discriminant analysis is to weight and linearly combine the discriminating variables in some fashion so that the groups are forced to be as statistically distinct as possible. Discriminant analysis attempts to do this by forming one or more linear combinations of the discriminating variables. The maximum number of functions which can be derived is either one less than the number of groups or equal to

TABLE 3

MAJOR FACTORS FOR THE SAMPLE

FACTOR I - Age & Time in Special Ed.

(13% of the variance)

Time in Sp. Ed.not incl. presch.	.91
Time in BOCES Sp. Ed.	.89
Time in Sp. Ed. incl. presch.	.77
Current Age	.72
Mathematics Achievement	.33
Academic Disabilities	.31
Reading Achievement	.30
Current IQ	-.30

FACTOR II - Achievement & Aptitude

(12% of the variance)

Mathematics Achievement	.83
Reading Achievement	.81
Current IQ	.71
Aggressive Behavior	.45
Current Age	.43
Academic Disabilities	-.35
Sex	-.31

FACTOR III - Socio/Economic Influence

(9.6% of the variance)

Father's Education	.83
Father's Occupation	.77
Mother's Education	.73
Number of Siblings	-.37
Number of Handicapped Siblings	-.35

FACTOR IV - Preschool Experience

(7.5% of the variance)

Time in Preschool	.91
Preschool Experience	.89
Time in Sp. Ed. incl. preschool	.58

FACTOR V - Covert Negative Behavior

(6.2% of the variance)

Hostile Behavior	.77
Anxiety Behavior	.74
Low Need for Achievement	.74
Academic Disabilities	.41

FACTOR VI - Cultural Influence

(5.5% of the variance)

Family Structure	.67
Mother's Occupation	-.65
Ethnicity	.58

the number of discriminating variables, if there are more groups than variables. In addition, if there are more discriminating variables than necessary to achieve satisfactory discrimination, the stepwise discriminant analysis procedure can be utilized.

The stepwise procedure was employed in this study. The process commenced by choosing the single variable which had the highest value on the selection criterion. The criterion utilized in this analysis was the overall multivariate F ratio for the test of differences among the group centroids. The variable which maximized this F ratio also minimized Wilks' lambda, a measure of group discrimination. This test took into consideration the differences between all the centroids and the cohesion (homogeneity) within the groups.

The initial variable was then paired with each of the other variables, one at a time, and the selection criterion was computed. This procedure of locating the next variable yielding the best criterion score, given the variables already selected, continued until no additional variables provided a minimum level of improvement.

For the following discriminant analyses, six potential discriminating variables were selected from the six factors of the aforementioned factor analysis. The variable with the highest factor loading and having the fewest number of missing cases was chosen from each of the factors, namely: Time in Special Education - not including preschool, Current IQ, Father's Occupation, Hostile Behavior, Preschool Experience and Family Structure.

It should be noted that cases with missing values were deleted in a listwise fashion in the computation of the stepwise discriminant analyses. That is, listwise deletion caused a case to be omitted from the calculation when that case contained a missing value on any variable entered into the computation. For the calculation of the classification routine all cases were included as follows. If the placement group code was missing the case was treated as unclassified. If data were missing from the discriminanting variable, the total mean for the respective variable was submitted. Therefore, at times, the number of cases used in the stepwise discriminant analyses were different from the number of cases used in the classification routines.

For the first stepwise discriminant analysis performed on the entire sample, two educational placement groups were used - those that remained in the special education school and those that were returned to district. For the second stepwise discriminant analysis performed on the entire sample, three educational placement groups were used - those that remained in self-contained classes in the special education school, those that were returned to district in more restrictive placements (self-contained special classes for the entire school day with teacher-to-student ratios equal to or less than 1:12) and those that were returned to district and mainstreamed in less restrictive placements (regular classes, resource room programs or special classes for at least 50% of the school day with a teacher-to-student ratio of 1:12). For the succeeding stepwise discriminant analyses performed on three separate handicapped subsamples (the multiply handicapped, speech impaired and emotionally disturbed), the aforementioned two educational placement groups were used.

Stepwise Discriminant Analysis With Two Placement Groups With The Entire Sample

Results of the first stepwise discriminant analysis (using six potential discriminating variables and two educational placement groups) for the entire sample are presented in Tables 4 and 5. Table 4 shows the group means and standard deviations for each of the six potential discriminating variables by each of the two placement groups (returned to district and remained in special education school) with the entire sample.

TABLE 4

GROUP MEANS AND STANDARD DEVIATIONS FOR EACH SELECTED POTENTIAL DISCRIMINATING VARIABLE FOR EACH OF THE TWO PLACEMENT GROUPS WITH THE ENTIRE SAMPLE

Variable	Remained In Special Ed. School (N=236)		Returned to School District (N=41)	
	Mean	S. D.	Mean	S. D.
Time in Special Ed. (not incl. preschool)	29.53	20.24	26.07	18.29
Current IQ	75.52	19.11	89.02	18.20
Hostile Behavior	54.01	10.10	49.58	9.28
Father's Occupation	4.13	2.04	4.12	1.86
Preschool Experience	1.59	.49	1.51	.50
Family Structure	1.26	.44	1.09	.30

The stepwise discriminant procedure resulted in three variables, Current IQ, Family Structure and Hostile Behavior entering into the analysis at steps one, two and three respectively. The remaining three variables added very little to the discrimination between the two groups and therefore were not forced into the analysis. Current IQ, Family Structure and Hostile Behavior were selected before Wilks' lambda became nonsignificant and produced a relatively low degree of separation among the groups as indicated by the final Wilks' lambda of .89. The standardized canonical discriminant function coefficient contributions of the three discriminating variables to the one function represented primarily Current IQ, (-.77), with Family Structure (.52) and Hostile Behavior (.42) playing secondary roles.

The one significant discriminant function (X^2 = 29.23, df = 3, p = .00), with its eigenvalue (.11) and its associated canonical correlation (.31) further connoted a relatively low degree of separation between the groups. Further evidence about the group differences was derived from the group centroids which summarized the group locations in the (reduced) space defined by the discriminant functions. It appeared from the group centroids that the groups were not that widely separated, with - .80 for the group centroid for those that returned to district and .13 for the group centroid for those that remained in the special education school. Since most of the children remained in the special education school, it was not possible to get a high degree of separation among the groups with such an uneven split. This is also evidenced in the rest of the discriminant analyses performed in this section.

Table 5 presents the classification routine which classified the original set of cases to see how many were correctly classified by the variables used. Appoximately 86% of the cases were correctly identified by the classification routine as members of the groups to which they actually belonged, with a larger number of errors made in misclassifying those youngsters who returned to district as compared to those remaining in the special education school.

TABLE 5

CLASSIFICATION RESULTS FOR TWO PLACEMENT GROUPS WITH THE ENTIRE SAMPLE

Actual Group	N of Cases	Predicted Group Membership Returned to District	 Remained in Special Ed. School
Returned to District	47	1 6.1%	46 93.9%
Remained in Sp. Ed. School	305	2 0.7%	303 99.3%

Percent of "grouped" cases correctly classified: 86.44%

Stepwise Discriminant Analysis With Three Placement Groups With The Entire Sample

Results of the second stepwise discriminant analysis (using six potential discriminating variables and three educational placement groups) with the entire sample are presented in Tables 6 and 7.

Table 6 shows the group means and standard deviations for each of the six potential discriminating variables by each of the three placement groups (mainstreamed in district, self-contained in district and remained in special education school) with the entire sample.

TABLE 6

GROUP MEANS AND STANDARD DEVIATIONS FOR EACH SELECTED POTENTIAL DISCRIMINATING VARIABLE FOR EACH OF THE THREE PLACEMENT GROUPS WITH THE ENTIRE SAMPLE

Variable	Mainstreamed In District (N=13)		Self-Contained In District (N=28)		Remained In Spec.Ed.School (N=236)	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Time in Sp. Ed. (not incl. presch.)	22.38	18.74	27.78	18.16	29.53	20.24
Current IQ	99.07	18.41	84.35	16.40	75.52	19.11
Hostile Behavior	48.07	9.84	50.28	9.12	54.01	10.10
Father's Occupation	4.23	2.00	4.07	1.82	4.13	2.04
Preschool Exper.	1.53	.51	1.50	.50	1.59	.49
Family Structure	1.15	.37	1.07	.26	1.26	.44

The stepwise discriminant procedure resulted in two variables, Current IQ and Family Structure entering into the analyses at steps one and two respectively. The remaining four variables added very little to the discrimination among the three conditions and therefore were not forced into the analysis. Current IQ and Family Structure were selected before Wilks' lambda became nonsignificant and produced a relatively low degree of separation among the three groups as indicated by the final Wilks' lambda of .89. The standardized canonical discriminant function coefficient contributions of the two discriminating variables to each of the functions indicated that the first function represented primarily Current IQ (.93) and then Family Structure

(-.46), while the second function represented primarily Family Structure (.89) with Current IQ (.36) as a secondary component.

The one significant discriminant function ($X^2 = 26.69$, df = 4, p = .00), with its eigenvalue (.10) and canonical correlation (.30) connoted a relatively low degree of separation among the groups. The second function appeared to be useless based on its very small eigenvalue (.00) and its very low canonical correlation (.08). Moreover, before any function was removed, lambda was .89, indicating that a relatively small degree of discriminating power existed in the variables being used. After some of this discriminating power was removed by placing it into the first discriminant function, lambda increased to .99 and the chi-square denoted that a nonstatistically significant amount of discriminating information now existed. Furthermore, the percent of variance or discriminatory power of the first function was 93.19% and that of the second function was 6.81%.

Further evidence about the group differences can be derived from the group centroids. Using the first function for the two measures, the centroids for the three placement categories were as follows: mainstreamed in district = 1.16; self-contained in district = .52; and remained in special education school = -.12. For comparative purposes, the centroids on the second function were: mainstreamed in district = .23; self-contained in district = .21; and remained in special education school - .01. It appeared that the separation among the groups was much more pronounced on the first discriminant variate than on the second. In addition, on the first discriminant variate, the centroids for the three placement conditions were about equally spaced, with the self-contained in district condition occupying the intermediate position. On the second discriminant variate, the centroids for the three placement conditions were equally spaced, with the remaining in special education school condition occupying the intermediate position.

Table 7 presents the classification routine which classifies the original set of cases to see how many were correctly classified by the variables used. Approximately 86% of the cases were correctly identified by the classification routine as members of the groups to which they actually belonged, with all of the errors made in misclassifying those youngsters who returned to district, regardless of placement, with those remaining in the special education school.

TABLE 7

CLASSIFICATION RESULTS FOR THREE PLACEMENT GROUPS FOR THE ENTIRE SAMPLE

		Predicted Group Membership		
Actual Group	N of Cases	Mainstreamed In District	Self Contained In District	Remained In Sp. Ed. Sch.
Mainstreamed in District	16	0 0.0%	0 0.0%	16 100.0%
Self-Contained in District	33	0 0.0%	0 0.0.%	33 100.0%
Remained in Sp. Ed. School	305	0 0.0%	0 0.0%	305 100.0%

Percent of "grouped" cases correctly classified 86.16%

Stepwise Discriminant Analysis With Two Placement Groups With The Multiply Handicapped Subsample

Results of the stepwise discriminant analysis (using six potential discriminating variables and two education placement groups) for the multiply handicapped subsample are presented in Tables 8 and 9.

Table 8 shows the group means and standard deviations for each of the six potential discriminating variables by each of the two placement groups (returned to district and remained in special education school) with the multiply handicapped subsample.

TABLE 8

GROUP MEANS AND STANDARD DEVIATIONS FOR EACH SELECTED POTENTIAL DISCRIMINATING VARIABLE FOR EACH OF THE TWO PLACEMENT GROUPS WITH THE MULTIPLY HANDICAPPED SUBSAMPLE

Variable	Remained in Special Ed. School (N=56)		Returned to School District (N=8)	
	Mean	S. D.	Mean	S. D.
Time in Special Ed. (not incl. preschool)	33.05	21.56	23.12	13.06
Current I.Q.	69.53	16.11	85.87	14.42
Father's Occupation	4.17	2.28	4.37	1.76
Hostile Behavior	53.32	9.68	53.12	9.59
Preschool Experience	1.60	.49	1.50	.53
Family Structure	1.25	.43	1.12	.35

The stepwise discriminant analysis procedure resulted in only one variable, Current IQ, entering into the analysis. After the first step, the remaining five variables added very little to the discrimination between the two groups and therefore were not forced into the analysis. Only Current IQ, of the six variables, was selected before Wilks' lambda became nonsignificant. This one variable, produced a relatively low degree of separation between the groups as indicated by Wilks' lambda of .89. The standardized canonical discriminant function coefficient representing the relative contribution of this variable to the function was 1.00 since it was the only variable present in the function.

The relatively low eigenvalue (.11) and its associated canonical correlation (.32) for the one significant discriminant function ($X^2 = 6.90$, df = 1, p = .00) further connoted a relatively low degree of separation between the groups. Further evidence about the group differences were derived from the group centroids. It appeared from the group centroids that the group that returned to district (.89) was not that widely separated from the group that remained in the special education school (-.12).

Table 9 presents the classification routine which classified the original set of cases to see how many were correctly classified by the variables used. Approximately 89% of the cases were correctly identified by the classification routine as members of the groups to which they actually belonged, with all of the errors made in misclassifying those youngsters who returned to district with those remaining in the special education school.

TABLE 9

CLASSIFICATION RESULTS FOR TWO PLACEMENT GROUPS WITH THE MULTIPY HANDICAPPED SUBSAMPLE

		Predicted Group Membership	
Actual Group	N of Cases	Returned to District	Remained In Sp.Ed. Schcol
Returned to District	10	0 0.0%	10 100.0%
Remained in Sp,Ed. School	81	0 0.0%	81 100.0%

Percent of "grouped" cases correctly classified: 89.01%

Stepwise Discriminant Analysis With Two Placement Groups With The Speech Impaired Subsample

Results of the stepwise discriminant analysis (using six potential discriminating variables and two educational placement groups) for the speech impaired subsample are presented in Tables 10 and 11.

Table 10 shows the group means and standard deviations for each of the six potential discriminating variables by each of the two placement groups (returned to district and remained in special education school) for the speech impaired subsample.

TABLE 10

GROUP MEANS AND STANDARD DEVIATIONS FOR EACH SELECTED POTENTIAL DISCRIMINATING VARIABLE FOR EACH OF THE TWO PLACEMENT GROUPS WITH THE SPEECH IMPAIRED SUBSAMPLE

Variable	Remained in Sp. Ed. School (N=37)		Returned to School District (N=14)	
	Mean	S. D.	Mean	S. D.
Time in Sp. Ed. (not incl. presch.)	23.91	26.20	19.57	16.77
Current IQ	72.24	16.59	93.21	20.29
Father's Occupation	3.75	2.06	4.14	2.12
Hostile Behavior	51.64	9.51	45.00	7.21
Preschool Experience	1.81	.39	1.78	.42
Family Structure	1.16	.37	1.07	.26

The stepwise discriminant analysis procedure resulted in only one variable, Current IQ, entering into the stepwise discriminant analysis. After the first step, the remaining five variables added very little to the discrimination between the two groups and therefore were not forced into the analysis. Only Current IQ of the six variables was selected before Wilks' lambda became nonsignificant. The one variable, Current IQ, produced a noticeable degree of separation between the groups as indicated by Wilks' lambda of .77. The standardized canonical discriminant function coefficient representing the relative contribution of this variable to the function was 1.00 since it was the only variable present in the function.

The eigenvalue (.29) and its associated canonical correlation (.47) for the one significant discriminant function ($X^2 = 1.43$, df = 1, p = .00) further connoted a noticeable degree of separation between the groups.

Further evidence about the group differences was derived from the group centroids which displayed that the group that returned to district (.86) was noticeably separated from the group that remained in the special education school (-.32).

Table 11 presents the classification routine which classified the original set of cases to see how many were correctly classified by the variable used. Approximately 75% of the cases were correctly identified by the classification routine as members of the groups to which they actually belonged, with approximately half of those youngsters who returned to district misclassified and 14% of those youngsters who remained in the special education school misclassified.

TABLE 11

CLASSIFICATION RESULTS FOR TWO PLACEMENT GROUPS
WITH THE SPEECH IMPAIRED SUBSAMPLE

		Predicted Group Membership	
Actual Group	N of Cases	Returned To District	Remained In Sp. Ed. School
Returned to District	17	8 47.1%	9 52.9%
Remained in Sp. Ed. School	44	6 13.6%	38 86.4%

Percent of "grouped" cases correctly classified 75.41%

Stepwise Discriminant Analysis With Two Placement Groups With The Emotionally Disturbed Subsample

Table 12 shows the group means and standard deviations for each of the six potential discriminating variables for each of the two placement groups (returned to district and remained in special education school) with the emotionally disturbed subsample.

TABLE 12

GROUP MEANS AND STANDARD DEVIATIONS FOR EACH SELECTED POTENTIAL DISCRIMINATING VARIABLE FOR EACH OF THE TWO PLACEMENT GROUPS WITH THE EMOTIONALLY DISTURBED SUBSAMPLE

Variable	Remained In Sp. Ed. School (N=76)		Returned To School District (N=11)	
	Mean	S. D.	Mean	S. D.
Time in Sp. Ed. (not incl. presch.)	28.31	19.42	26.72	18.13
Current I.Q.	86.90	17.72	97.54	15.92
Father's Occupation	3.61	1.81	3.72	1.73
Hostile Behavior	54.51	9.68	51.54	9.71
Preschool Experience	1.46	.50	1.27	.46
Family Structure	1.39	.49	1.18	.40

The stepwise discriminant analysis procedure resulted in no variables qualifying for the analysis, therefore none of the potential discriminating variables predicted a significant separation between the placement groups with the emotionally disturbed subsample.

CHAPTER IV

DISCUSSION

Clinical experience has highlighted the following factors as being critical to the mainstreaming of handicapped youngsters: age of the child, length of time in special class, degree of severity of the handicapping condition, potential to form social relationships, family support, academic skills, and functional characteristics. Research related to mainstreaming criteria have focused on a more limited set of variables which overlap somewhat with those factors derived from clinical experience, and include: IQ, academic achievement and student behavioral characteristics.

Although several investigators (Algozzine, Whorton, & Reid, 1979; Bullard, 1982; Wilkes, Bireley, & Schultz, 1979) reported in their research on a limited set of criteria, as explicated above, for mainstreaming handicapped students (learning disabled and mentally retarded) into regular classes from special classes; none of the above specifically focused on the relative importance of a more comprehensive set of exit criteria for all of the different handicapped groups from a special education facility into a continuum of less restrictive placement options within local school districts. Therefore the examination of criteria suggested by the literature whose application would result in the most accurate separation among children with different handicapping conditions into the continuum of mainstreaming program options from a special education school appeared warranted.

Furthermore, though Bullard (1982) examined specific criteria specified by teachers and principals for making mainstreaming decisions, the set of criteria was limited to academic and behavioral characteristics and to one handicapped group, the learning disabled. Therefore, the examination of criteria deemed necessary by school personnel in making mainstreaming decisions for all groups of handicapped students also appeared to be warranted.

Review of the Hypotheses

Hypothesis 1 proposed that there would be differences in placement criteria distinguishing those handicapped youngsters remaining in segregated special education schools from those returning to local school district educational settings.

To test this hypothesis, the stepwise discriminant analysis procedure was employed with the entire sample with a specific set of potential discriminating variables deemed critical by factor analytic techniques. This procedure was used to distinguish between those youngsters who remained in the special education school and those that returned to district either in self-contained or mainstreamed settings.

Three variables, Current IQ, Family Structure and Hostile Behavior, appeared to discriminate between the two groups. The contributions of these three discriminating variables to the discriminant function represented primarily Current IQ, with Family Structure and Hostile Behavior appearing as secondary components.

Those youngsters who remained in the special education school evidenced a mean IQ (75.52) which fell in the borderline range, while those youngsters who returned to district evidenced a mean IQ (89.02) which fell in the low average range. Furthermore, those youngsters who remained in the special education school appeared to score higher on the Family Structure and Hostile Behavior variables than those youngsters who returned to district. These results connoted a more unstable family structure and more overt hostile behavior for the students who remained in the special education school.

When the youngsters were subdivided further into three groups (those that remained in the special education school, those that returned to district in self-contained classes and those that returned to district mainstreamed) two variables, Current IQ and Family Structure, appeared to discriminate among these three groups. The contribution of these two discriminating variables to the one significant discriminant function indicated that IQ played a prominent role, with Family Structure as a secondary component.

Those youngsters who remained in the special education school evidenced a mean IQ (75.52) which fell in the borderline range, while those youngsters who were returned to district in self-contained and mainstreamed settings evidenced mean IQs (84.35 and 99.07) which fell in the low average and average ranges respectively. Furthermore, those youngsters who remained in the special education school showed the highest score on the Family Structure variable, connoting less family stability, while those youngsters who returned to district in self-contained classes showed the lowest score on Family Structure, connoting the most intact family structure, and those youngsters who returned to district in mainstreamed settings fell somewhere in the middle of these two groups.

In summary, one may argue that of the relevant variables examined, IQ still played the largest role in discriminating between those youngsters who remained in special education schools (those with mean IQs falling in the borderline range) and those who returned to district in either self-contained or mainstreamed settings (those with mean IQs in the average range). Secondly, it appeared that those youngsters who remained in the special education school were from families that were less intact than those who were returned to district either in self-contained or mainstreamed settings. The more stable the family, the greater the likelihood for the youngster to be returned to district. Thirdly, those youngsters with the highest degree of overt hostile behavior were those who remained in the special education school as distinguished from those who were returned to district in either self-contained or mainstreamed placements. The more overtly hostile the youngster's behavior was, the greater likelihood it was for that youngster to remain in the special education school.

While the above-mentioned results shed some light on the differences between those youngsters who remained in segregated special education schools and those who returned to local school districts; discrimination between these two groups of youngsters on the statistically significant discriminating variables (Current IQ, Family Structure and Hostile Behavior) connoted a relatively low degree of separation between these groups. When the youngsters were further subdivided among three types of educational placement groups (those who remained in the special education school, those who returned to district in self-contained classes, and those who returned to district mainstreamed) discrimination among these three groups of youngsters on the statistically significant discriminating variables (Current IQ and Family Structure) also connoted a relatively low degree of separation.

Therefore, although these variables played a statistically significant role in discriminating among educational placement groups, it appeared that their degree of discriminating power was relatively low. Since most of the youngsters remained in the special education school, it was not possible to get a high degree of separation among the groups with such an uneven split. Therefore, if the sample of youngsters who were returned to district had been larger, the originally examined variables may have produced a higher degree of discrimination among the groups.

To elaborate on the utilization of the aforementioned significant variables as distinguishing mainstreaming criteria, the following previous clinical work and empirical research comes to mind. Regarding IQ as a potential discriminating variable, one other empirical study conducted by Algozzine, Whorton and Reid (1979) was cited. They found that adaptive behavior scores, IQ and achievement scores were predictive of mainstreaming decisions. More specifically, their obtained linear composite derived from a discriminant analysis denoted the following discriminating variables arranged in weighted descending order: adaptive behavior, spelling achievement, IQ and reading achievement.

In the Algozzine, Whorton and Reid (1979) study, IQ played a secondary role in discriminating between those youngsters who remained in segregated special education settings and those who were returned to district. On the other hand, in the present study, IQ had the most significant weight in predicting group mainstreaming placement. The importance of IQ as a primary measure in distinguishing youngsters for for mainstreaming placement appears inconclusive at this time.

Forness (1979) considered familial support as critical in the re-entry of the handicapped into mainstreamed placements. Without the stable family members to provide encouragement, it was felt that the handicapped youngsters would be more vulnerable to secondary emotional reactions and social isolation within a mainstreamed setting. Other clinicians stressed those overt behaviors which fostered or exacerbated learning problems in mainstreamed settings as critical to placement decisions. Such behaviors as impulsivity and temperamental behavior patterns were cited as being detrimental to placement decisions. Therefore, the influence of the variables of family stability and overt negative behavior in distinguishing youngsters for mainstreaming placement decisions appeared to reflect clincial experience to date.

Hypothesis 2 proposed that there would be differences in terms of criteria for distinguishing mainstreaming placements among different handicapped groups. In addition, it was proposed that although there would be a limited set of common criteria across all handicapping conditions, there would be different patterns or weights of criteria evidenced for each specific handicapped group.

The data retrieved from the student records revealed that only one variable, Current IQ, distinguished between those youngsters who remained in the special education school and those who returned to district with both the multiply handicapped and speech impaired subsamples. For the emotionally disturbed subsample, the discriminant analysis procedure resulted in no variables qualifying for the analysis. Therefore, none of the potential discriminating variables distinquished between those youngsters who remained in the special education school and those who returned to district for the emotionally disturbed youth.

IQ tended to discriminate between the group who remained in the special education school and those who returned to district to a slightly greater extent with the speech impaired than with the multiply handicapped. With the speech impaired subsample, those youngsters who were returned to district evidenced a mean IQ (93.21) which fell in the average range while those youngsters who remained in the special education school evidenced a mean IQ (72.74) which fell in the borderline range. With the multiply handicapped subsample, those youngsters who were returned to district evidenced a mean IQ (85.87) which fell in the low average range, while those youngsters who remained in the special education school evidenced a mean IQ (69.53) which fell in the borderline range.

It appeared from this present study, contrary to the clinical and empirical research literature to date, that IQ alone played a role in distinguishing those youngsters with specific handicapping conditions (multiply handicapped and speech impaired) who were mainstreamed from those that remained in a segregated special education school. As previously mentioned in the clinical and empirical research literature, IQ along with other behavioral, achievement and familial background measures have been used to distinguish between specific groups of handicapped youngsters who were mainstreamed and those that remained in segregated educational settings. Therefore, the importance of IQ as a singular measure in distinguishing specific handicapped groups of youngsters for mainstreaming appears inconclusive at this time.

Summary and Conclusions

In summary, these results indicated that the variables which tended to discriminate the most between handicapped youngsters who were returned to district in less restrictive educational settings and those who remained in a segregated special education school were primarily the youngster's current IQ, followed by the family's stability and a rating of the youngster's hostile behavior. Therefore, handicapped youngsters with higher IQs, greater family intactness and showing fewer signs of hostile behavior were more likely to return to the district in less restrictive educational settings.

For two specific handicapped groups, the multiply handicapped and the speech impaired, only one variable, Current IQ, tended to discriminate between those youngsters who returned to district in less restrictive settings and those who remained in the special education school. More specifically, IQ discriminated to a slightly greater degree between these groups with the speech impaired than with the multiply handicapped subsample.

Though the variables of Current IQ, Family Structure and Hostile Behavior played a statistically significant role in discriminating among the educational placement groups, it appeared that their degree of discriminating power was relatively low. Perhaps, if the sample of youngsters who were returned to district had been larger, the originally examined variables may have produced a higher degree of discrimination among the groups.

Further studies which examine factors related to mainstreaming should consider using larger samples when looking at specific handicapped groups. In addition, other variables such as degree of parent advocacy, severity of the youngster's handicapping condition as well as other relevant factors should also be examined.

References

Abeson, A., Bolick, N., & Hass, J. (1977). A primer on due process. Reston, VA: The Council for Exceptional Children.

Algozzine, R., Whorton, J.E., & Reid, W.R. (1979). Special class exit criteria: A modest beginning. The Journal of Special Education, 13. (2), 132-136.

Anderson, R.M., Martinez, D.H., & Rich, H.L. (1980). Perspectives for change. In J. Schifani, R. Anderson, & S. Odle (Eds.), Implementing learning in the least restrictive environment. Baltimore: University Park Press.

Bullard, J.K. (1982). Factors in mainstream decision-making. Unpublished Doctoral Dissertation, University of Pittsburgh.

Chiba, D., & Semmel, M. (1977). Due process and least restrictive alternative: New emphases on parental participation. Viewpoints, 53 (2), 17-29.

Deno, E. (1970). Special education as developmental capitol. Exceptional Children, 37, 229-237

Forness, S.R. (1979). Clinical criteria for mainstreaming mildly handicapped children. Psychology in the Schools, 16 (4), 508-513.

Hall, R., & Keogh, B. (1978). Qualitative characteristics of educationally high-risk children. Learning Disability Quarterly, 1, 62-68

Hannaford, A.D., Simon, J., & Ellis, D. (1975). Criteria for special class placement of the mildly retarded - Multidisciplinary comparison. Mental Retardation, 13, 7-10

Keogh, B., Cahill, C., & MacMillan, D. (1972). Perception of interruption by educationally handicapped children. American Journal of Mental Deficiency, 77, 107-108.

Keogh, B.K., & Donlon, G.M. (1972). Field dependence, impulsivity, and learning disabilities. Journal of Learning Disabilities, 5, 331-336.

Keogh, B., & Margolis, J. (1976). Learn to labor and to wait: Attentional problems of children with learning disorders. Journal of Learning Disabilities, 9, 276-286.

Knoff, H.M. (1983). Effect of diagnostic information on special education placement decisions. Exceptional Children, 49, 440-446.

La Vor, M.L., (1977). You want to change the system - But where do you begin? In F.J. Weintraub, A. Abeson, J. Ballard, & M.L. La Vor (Eds.), Public policy and the education of exceptional children Reston, VA: The Council for Exceptional Children.

Lowenbraun, S., & Affleck, J.Q. (1978). Least restrictive environment. Seattle: University of Washington.

MacMillan, D., & Cauffeil, S. (1977). Outerdirectedness as a function of success and failure in educationally handicapped boys. Journal of Learning Disabilities, 10, 48-59.

Matuszek, P., & Oakland, T. (1979). Factors influencing teachers' and psychologists' recommendation regarding special class placement. Journal of School Psychology, 17, 116-125.

Meisser, S. (1976). Reflectivity-impulsivity: A review Psychological Bulletin, 83, 1026-1052

Palmer, D.J. (1980). Factors to be considered in placing handicapped children in regular classes. Journal of School Psycholcgy, 18 (2), 163-170.

Palmer, D., & Hewett, F. (1973). Assessing the characteristics of EMR and EH students related to successful integration into a regular classroom. Technical Report, University of California, Los Angles.

Public Law 94-142. Education for all Handicapped Children Act of 1975 (S.6). 94th Congress, 1st Session, 1975.

Reynolds, M.C. (1962). A framework for considering some issues in special education. Exceptional Children, 28, 267-270.

Reynolds, M.C., & Birch, J.W. (1977). Teaching exceptional children in all America's schools. Reston, Va.: The Council for Exceptional Children.

Tarver, S., & Hallhan, D. (1974). Attention deficits in children with learning disabilities: A review. Journal of Learning Disabilities.

Thomas, A., Chess, S., & Birch, H. (1968). Temperamental and behavior disorders in children. New York: New York University Press.

Turnure, J. (1970). Reactions to physical and social distractors by moderately retarded institutionalized children. Journal of Special Education, 4, 283-294.

Wilkes, H.H., Bireley, M.K., & Schultz, J.J. (1979). Criteria for Mainstreaming the learning disabled child into the regular classroom. Journal of Learning Disabilities, 12 (4), 46-51

Zigler, E. (1966). Research on personality sturc ture in the retardate. In N. Ellis (Ed.), International review of research in mental retardation: Volume I. New York: Academic Press.

Appendix A

Categories of Handicapping Conditions

A Pupil with Handicapping Conditions: means an educationally handicapped child, who has not attained the age of 21 prior to September 1 or received a diploma, who is entitled to attend public schools and who, because of mental, physical or emotional reasons has been identified as having a handicapping condition and can receive appropriate educational opportunities from special services and programs. The range of classifications is as described below:

Mentally Retarded: a pupil who, concurrent with deficits in adaptive behavior, consistently demonstrates general intellectual functioning that is determined to be 1.5 standard deviations or below the mean of the general population on the basis of a comprehensive evaluation which includes an individual psychological evaluation.

Emotionally Disturbed: a pupil with an inability to learn which cannot be explained by intellectual, sensory or health factors and who exhibits one or more of the following characteristics over a long period of time and to a marked degree:

An inability to build or maintain satisfactory interpersonal relationships with peers and teachers.

Inappropriate types of behavior or feelings under normal circumstances.

A generally pervasive mood of unhappiness or depression.

A tendency to develop physical symptoms or fears associated with personal or school problems.

The term does not include socially maladjusted pupils unless it is determined that they are emotionally disturbed.

Deaf: a pupil with a hearing impairment which is so severe that the pupil is impaired in processing linguistic information through hearing, with or without amplification, which adversely affects educational performance.

Hard of Hearing: a pupil with a hearing impairment, whether permanent or fluctuating, which adversely affects the pupil's educational performance but which is not included under the definition of "deaf".

Speech Impaired: a pupil with a communication disorder, such as stuttering, impaired articulation, a language impairment, or a voice impairment, which adversely affects a pupil's educational performance.

Visually Impaired: a pupil with a visual handicap which, even with correction, adversely affects the pupil's educational performance. The term includes both partially seeing and blind pupils.

Orthopedically Impaired: a pupil who is physically handicapped and who has a severe orthopedic impairment which adversely affects the pupil's educational performance. The term includes impairments caused by congenital anomaly (e.g., clubfoot, absence of some member, etc.) impairments caused by disease (e.g., poliomyelitis, bone tuberculosis, etc.) and impairments from other causes (e.g., cerebral palsy, amputations, and fractures or burns which cause contractures).

Other Health Impaired: a pupil who is physically handicapped and who has limited strength, vitality or alertness, due to chronic or acute health problems such as a heart condition, tuberculosis, rheumatic fever, nephritis, asthma, sickle cell anemia, hemophilia, epilipsy, lead poisoning, leukemia, diabetes, or Tourette syndrome which adversely affect the pupil's educational performance.

Autistic: a pupil who exhibits a behaviorally defined syndrome which occurs in children of all levels of intelligence. The essential features are typically manifested prior to 30 months of age and include severe disturbances of developmental rates and/or sequences, or responses to sensory stimuli, of speech, of language, of cognitive capacities, and of the ability to relate to people, events, and objects.

Learning Disabled: a pupil with a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which manifests itself in an imperfect ability to listen, think, speak, read, write, spell, or to do mathematical calculations. The term includes such conditions as: perceptual handicaps, brain injury, neurological impairment, minimal brain dysfunction, dyslexia, and developmental aphasia. The terms does not include pupils who have learning problems which are primarily a result of visual, hearing, or motor handicaps, of mental retardation, of emotional disturbance, or of environmental, cultural or economic disadvantage. A pupil who exhibits discrepancy of 50 percent or more between expected achievement and actual achievement determined on an individual basis shall be deemed to have a learning disability.

Multiply Handicapped: a pupil with two or more handicapping conditions that result in multisensory or motor deficiencies and developmental lags in the cognitive, affective, or psychomotor areas, the combination of which cause educational problems that cannot be accommodated in a special education program solely for one of the impairments.

Appendix B

Predictor Variables

Student Background Data:

- Sex coded as follows:

  1 = Male
  2 = Female

- Home school district coded 1 through 56 for each of the Nassau County local schools districts and then changed to district tax valuations.
- Age in months
- Length of time in the BOCES elementary school programs in months.
- Length of time in special education in months.
- Type of placement prior to entry into BOCES.
- Attendance in preschool programs:

  1 = no preschool
  2 = special education preschool
  3 = regular preschool

- Length of time in preschool program in months.

Family Variables:

- Index of mother's education, coded as follows:

  1 = no schooling
  2 = K through 3rd
  3 = 4th through 6th
  4 = 7th through 8th
  5 = high school incomplete
  6 = high school complete
  7 = college incomplete
  8 = college complete
  9 = post-college experience

- Index of father's education coded same as mother's education.

- Occupation of father, coded as follows:

  1 = laborer
  2 = service worker
  3 = operator and kindred worker
  4 = craftsman, foreman and kindred worker
  5 = sales, clerical and kindred worker
  6 = proprietor, manager and official
  7 = professional, semi-professional

- Occupation of mother, coded same as father's occupation

- Family structure, coded as:

  1 = intact
  2 = single parent
  3 = foster care
  4 = other

- Number of siblings in the family

- Number of siblings with handicapping classifications

- Primary language spoken at home, coded as:

  1 = English
  2 = Spanish
  3 = Other
  4 = Nonverbal

- Ethnicity, coded as:

  1 = Black
  2 = White
  3 = Hispanic
  4 = Other

Student Behavior, Achievement, and IQ:

- Overall School Behavior Rating Score

- Subscale School Behavior Rating Scores

  - Low Need for Achievement
  - Aggressive Behavior
  - Anxiety Behavior
  - Academic Disabilities
  - Hostile Behavior
  - Extorversion Sociability

- Mathematics Achievement Test score in grade equivalents
- Reading Achievement Test score in grade equivalents
- Earliest IQ score (full scale)
- Latest IQ score (full scale)

Appendix C

Description of New York State Education Department Continuum of Placement Alternatives for the Handicapped

Regular Class Program

In this setting, the pupil receives whatever services are available to all students. Consultation and/or training may be provided to the regular classroom teacher from instructional specialists, administrators, or other members of the school staff.

Regular Class Program With Related Services

While in the regular education program, the pupil with a handicapping condition may receive two or more periods a week of related or other support services provided by appropriate specialists. The extent of these services may range from regular daily sessions to less frequent contacts depending upon the pupil's individualized education program.

Resource Room Program

The services in this program are provided to the pupil who requires specifically designed instruction for 20% or more of the school week in a resource room. While the pupil may be considered educationally handicapped and receiving special education in the resource room, he/she is placed in the regular classroom and interacts with nonhandicapped peers for 50% or more of the instructional day. Appropriate related services are also provided.

Special Class Program - Size Option 1

1 Teacher: 12 Students

This program is designed for pupils whose special education needs require specialized instruction which can best be accomplished in a self-contained setting for at least 50% of the school day with other pupils having similar special educational needs.

Special Class Program - Size Option 2

1 Teacher + 1 Paraprofessional: 12 Students

In addition to the need for special education instruction, students in this program exhibit behavioral problems which interfere with the instructional process to the extent that an additional adult is needed within the classroom to assist with the management needs of the pupils.

Special Class Program - Size Option 3

1 Teacher + 1 Paraprofessional: 6 Students

This program provides very individualized instruction. It offers the structure and adult to student ratio necessary for students whose management needs are determined to be highly intensive. The behavior of students in this program may be characterized as aggressive, self-abusive or extremely withdrawn.

Special Class Program - Size Option 4

1 Teacher: 12 Students

An additional adult/student ratio of 1:3

This program provides the intensive adult/student interaction needed by pupils with severe multiple handicaps. The needs of pupils in this program consist primarily of habilitation and treatment.

Residential Program

This program provides needed twenty-four hours a day comprehensive services which are unavailable to a pupil being educated in a special class and living at home. The program may be in a state-operated, state-supported or an approved private residential school setting.

Appendix D
DATA RECORDING INSTRUMENT

Student I.D. & Card Number ____________

Home School District ____________
(see code sheet)

Present School Program ____________
(see code sheet)

Sex 1. Male ______
2. Female ______

Date of Birth (month, year) ______

Father's Education ______ Father's Occupation ______

Mother's Education ______ Mother's Occupation ______
(see code sheet)

Family Structure
1. Intact ______
2. Single parent ______
3. Foster care ______
4. Other ______
(specify)

Number of Siblings ______

Number of Handicapped Siblings ______

Primary Language Spoken by Student
1. English ______
2. Spanish ______
3. Other ______
4. Nonverbal ______

Ethnicity 1. White ______
2. Black ______
3. Hispanic ______
4. Other ______

Date of first Special Education Placement ______
(Prior to BOCES) (not including preschool) month/year

Type of Placement Prior to Entry Into BOCES
1. District regular class
2. Private school regular class ______
3. District Special Education class ______
4. Private day school Special Ed. ______
5. Institution or more restrictive setting ______
6. None

Date of Entry Into BOCES ______
month/year

Handicapping Condition ______
at entry to BOCES (see code sheet)

Handicapping Condition ______
in 1982-1983

Computer Code
Col. 1-4
5 6
7 8
9
10 11 12 13
14 15
16 17
18
19
20
21
22
23 24 25 26
27
28 29 30 31
32 33
34 35

BEST COPY AVAILABLE

Latest I.Q. Score (if untestable 999) ______________ ☐☐☐ 36-38

Date ______________ ☐☐☐☐ 39-42
month year

Test Name ☐ 43
1. WISC or WISC-R ________
2. WPPSE ________
3. Stanford Binet ________
4. WAIS or WAIS-R ________
5. Other ________
(specify)

Earliest I.Q. Score (if untestable 999) ______________ ☐☐☐ 44-46

Date ______________ ☐☐☐☐ 47-50
month year

Test Name ☐ 51
1. WISC or WISC-R ________
2. WPPSE ________
3. Stanford Binet ________
4. WAIS or WAIS-R ________
5. Other ________
(specify)

Reading Test Total G.E. Score ________ and SS ________
Name of Test
Date of Test

Math Test Total G.E. Score ________ and SS ________
Name of Test
Date of Test

BEST COPY AVAILABLE

Preschool Experience (If no information, leave blank) ☐ 52
1. no preschool ________
2. regular preschool ________
3. Special Ed. preschool ________
(other than BOCES) ________
4. BOCES Special Ed. preschool ________

Date of entry into preschool ______________ ☐☐☐☐ 53-56
(If no preschool 9999) month year

Student I.D. and Card Number ________	57-60
Termination Date from BOCES (in month and year - if not terminated 9999) ________	61-64
Last program attended at BOCES	65-66
Type of placement made (see code sheet for options 1-8) ___	67
If BOCES placement, identify program (see code sheet - if not BOCES placement 99) ______	68-69
If district placement, identify district (see code sheet - if not district placement 99) ______	70-71
Card Number	1 80

BEST COPY AVAILABLE

ACHIEVEMENT TEST DATA RECORDING SUPPLEMENT FORM

Computer Code

Name______________________________ ___ ___ ___ ___
1 2 3 4

Card Number $\underset{5}{\boxed{4}}$

Reading Score ___ ___ ___ ___ ___ ___ ___ ___
6 7 8 9 10 11 12 13

Math Score ___ ___ ___ ___ ___ ___ ___ ___
14 15 16 17 18 19 20 21

CODE SHEET

SCHOOL DISTRICT OF RESIDENCE

01 Baldwin UFSD - Town of Hempstead
02 Bellmore UFSD - Town of Hempstead
03 Bellmore-Merrick CHSD - Town of Hempstead
04 Bethpage UFSD - Town of Oyster Bay
05 Carle Place UFSD - Town of North Hempstead
06 East Meadow UFSD - Town of Hempstead
07 East Rockaway UFSD - Town of Hempstead
08 East Williston UFSD - Town of North Hempstead
09 Elmont UFSD - Town of Hempstead
10 Farmingdale UFSD - Towns of Oyster Bay and Babylon
11 Floral Park-Bellerose UFSD - Towns of Hempstead and North Hempstead
12 Franklin Square UFSD - Town of Hempstead
13 Freeport UFSD - Town of Hempstead
14 Garden City UFSD - Town of Hempstead
15 Glen Cove City School District
16 Great Neck UFSD - Town of North Hempstead
17 Hempstead UFSD - Town of Hempstead
18 Herricks UFSD - Town of North Hempstead
19 Hewlett-Woodmere UFSD - Town of Hempstead
20 Hicksville UFSD - Town of Oyster Bay
21 Island Park UFSD - Town of Hempstead
22 Island Trees UFSD - Town of Hempstead
23 Jericho UFSD - Town of North Hempstead and Oyster Bay
24 Lawrence UFSD - Town of Hempstead
25 Levittown UFSD - Town of Hempstead
26 Locust Valley CSD - Town of Oyster Bay
27 Long Beach City School District
28 Lynbrook UFSD - Town of Hempstead
29 Malverne UFSD - Town of Hempstead
30 Manhasset UFSD - Town of North Hempstead
31 Massapequa UFSD - Town of Oyster Bay
32 Merrick UFSD - Town of Hempstead
33 Mineola UFSD - Town of North Hempstead
34 New Hyde Park-Garden City Park UFSD - Town of North Hempstead and Hempstead
35 North Bellmore UFSD - Town of Hempstead
36 North Merrick UFSD - Town of Hempstead
37 North Shore CSD at Glen Head, Glenwood Landing, Sea Cliff - Town of Oyster Bay and North Hempstead
38 Oceanside UFSD - Town of Hempstead
39 Oyster Bay-East Norwich CSD - Town of Oyster Bay
40 Plainedge UFSD - Town ofOyster Bay
41 Plainview-Old Bethpage CSD - Town of Oyster Bay
42 Port Washington UFSD - Town of North Hempstead
43 Rockville Centre UFSD - Town of Hempstead
44 Roosevelt UFSD - Town of Hempstead
45 Roslyn UFSD - Towns of North Hempstead and Oyster Bay

46 Seaford UFSD - Town of Hempstead
47 Sewanhaka CHSD - Towns of Hempstead and North Hempstead
48 Sole Supervisory District of Nassau County (BOCES)
49 Syosset CSD - Town of Oyster Bay
50 Uniondale UFSD - Town of Hempstead
51 Valley Stream CHSD - Town of Hempstead
52 Valley Stream UFSD Thirteen - Town of Hempstead
53 Valley Stream UFSD Twenty-four - Town of Hempstead
54 Valley Stream UFSD Thirty - Town of Hempstead
55 Wantagh UFSD - Town of Hempstead
56 Westbury UFSD - Towns of North Hempstead and Hempstead
57 West Hempstead UFSD - Town of Hempstead

BOCES Programs:
01 = Elementary (Plainedge, Plainview)
02 = Junior H.S. (Baldwin Harbor)
03 = Secondary - Career Development Center
04 = Secondary - Center for Community Adjustment
05 = Program for Physically Handicapped (Carman Road)
06 = Program for TMR (Rosemary Kennedy Center)
07 = Program for Hearing Impaired
08 = Program for Vision Impaired
09 = District-Based Learning Disability
10 = Preschool
11 = Occupational Education for Secondary School Youths
12 = Cultural Arts Center
13 = District Programs

Handicapping Condition:

01 = Autistic
02 = Emotionally Disturbed
03 = Learning Disabled
04 = Mentally Retarded
05 = Deaf
06 = Hard of Hearing
07 = Speech Impaired
08 = Visually Impaired
09 = Orthopedically Handicapped
10 = Other Health Impaired
11 = Multiply Handicapped
12 = no handicapping classification by COH
99 = no information available

Father's/Mother's Education:

1 = No schooling
2 = K through 3rd
3 = 4th through 6th
4 = 7th through 8th
5 = High school incomplete
6 = High school complete
7 = College incomplete
8 = College complete
9 = Post-college experience

BEST COPY AVAILABLE

Father's/Mother's Occupation:

0 = Unemployed
1 = Laborer
2 = Service Worker
3 = Operator
4 = Craftsman, Foreman
5 = Sales, Clerical
6 = Proprietor, Manager and Official
7 = Professional, Semi-professional
8 = Homemaker

PLACEMENT CATEGORY

1 - REGULAR CLASS PROGRAM

In this setting, the pupil receives whatever services are available to all students. Consultation and/or training may be provided to the regular classroom teacher from instructional specialists, administrators, or other members of the school staff.

2 - REGULAR CLASS PROGRAM WITH RELATED SERVICES

While in the regular education program, the pupil with a handicapping condition may receive two or more periods a week of related or other support services provided by appropriate specialists. The extent of these services may range from regular daily sessions to less frequent contacts depending upon the pupil's individualized education program.

3 - RESOURCE ROOM PROGRAM

The services in this program are provided to the pupil who requires specifically designed instruction for 20% or more of the school week in a resource room. While the pupil may be considered educationally handicapped and receiving special education in the resource room, he/she is placed in the regular classroom and interacts with nonhandicapped peers for 50% or more of the instructional day. Appropriate related services are also provided.

4 - SPECIAL CLASS PROGRAM - SIZE OPTION 1

1 Teacher: 12 Students

This program is designed for pupils whose special education needs require specialized instruction which can best be accomplished in a self-contained setting for at least 50% of the school day with other pupils having similar special educational needs.

5 - SPECIAL CLASS PROGRAM - SIZE OPTION 2

1 Teacher + 1 Paraprofessional: 12 Students

In addition to the need for special education instruction, students in this program exhibit behavioral problems which interfere with the instructional process to the extent that an additional adult is needed within the classroom to assist with the management needs of the pupils.

6 - SPECIAL CLASS PROGRAM - SIZE OPTION 3

1 Teacher + 1 Paraprofessional: 6 Students

This program provides very individualized instruction. It offers the structure and adult to student ratio necessary for students whose management needs are determined to be highly intensive. The behavior of students in this program may be characterized as aggressive, self-abusive or extremely withdrawn.

7 - SPECIAL CLASS PROGRAM - SIZE OPTION 4

1 Teacher: 12 Students

An additional adult/student ratio of 1: 3

This program provides the intensive adult/student interaction needed by pupils with severe multiple handicaps. The needs of pupils in this program consist primarily of rehabilitation and treatment.

8 - RESIDENTIAL PROGRAM

This program provides needed twenty-four a day comprehensive services which are unavailable to a pupil being educated in a special class and living at home. The program may be in a state-operated, state-supported or an approved private residential school setting.

BEST COPY AVAILABLE

BEST COPY AVAILABLE

APPENDIX E SCHOOL BEHAVIOR CHECKLIST

Date ________ Student Name ________ Student ID ________

Directions: Read EACH statement and decide if it describes the child selected for rating. If it does, check YES. If the statement does not describe the child, check NO.

Note: It is IMPORTANT that you check EACH statement. If you are in DOUBT, check the answer which is most true.

1. He is friendly ☐ YES ☐ NO
2. He tends to give up if he has something hard to finish ☐ YES ☐ NO
3. He interrupts whomever is speaking ☐ YES ☐ NO
4. Penmanship (handwriting) at least one grade level below age expectation ☐ YES ☐ NO
5. He starts fighting over nothing ☐ YES ☐ NO
6. He is a helpful child ☐ YES ☐ NO
7. He is alert in class ☐ YES ☐ NO
8. Poorly coordinated when doing things with his hands such as coloring or pencil work ☐ YES ☐ NO
9. Reading ability at least one grade level below age expectation ☐ YES ☐ NO
10. On the playground he just stands around ☐ YES ☐ NO
11. He acts up when I'm not watching ☐ YES ☐ NO
12. He volunteers to recite in class ☐ YES ☐ NO
13. He hits and pushes other children ☐ YES ☐ NO
14. His hands shake when he is called on to recite ☐ YES ☐ NO
15. He finds fault with what other children do ☐ YES ☐ NO
16. He approaches a difficult task with an air of defeatism ☐ YES ☐ NO
17. He is considerate of others ☐ YES ☐ NO
18. Fails to carry out tasks (Homework assignments, seat work, etc.) ☐ YES ☐ NO
19. He lacks the ambition to do well in school ☐ YES ☐ NO
20. He does things to get others angry ☐ YES ☐ NO
21. He will put up an argument when told he can't do something ☐ YES ☐ NO
22. He does his homework ☐ YES ☐ NO
23. He teases other children ☐ YES ☐ NO
24. He is afraid of making mistakes ☐ YES ☐ NO
25. He is bossy with other children ☐ YES ☐ NO
26. He is easily upset by changes in things around him ☐ YES ☐ NO
27. He is sure of himself ☐ YES ☐ NO
28. He uses abusive language toward other children ☐ YES ☐ NO
29. He has changeable moods ☐ YES ☐ NO
30. He gives in when another child insists on doing something another way ☐ YES ☐ NO
31. He does not respect other people's belongings ☐ YES ☐ NO
32. He does not forget things which anger him ☐ YES ☐ NO
33. He seems to be off in a world of his own ☐ YES ☐ NO
34. Any form of discipline makes him furious ☐ YES ☐ NO
35. He likes an audience all the time ☐ YES ☐ NO
36. Finds it hard to study ☐ YES ☐ NO
37. He has to have everything his own way ☐ YES ☐ NO
38. He works well by himself ☐ YES ☐ NO
39. When angry he will refuse to speak to anyone ☐ YES ☐ NO
40. His school performance is far below his capabilities ☐ YES ☐ NO
41. He has no friends ☐ YES ☐ NO
42. Behind at least one school grade due to academic difficulties ☐ YES ☐ NO
43. Seems dull; slow to catch on ☐ YES ☐ NO
44. He will not ask questions even when he doesn't know how to do the work ☐ YES ☐ NO
45. He fights back if another child has been asking for it ☐ YES ☐ NO

VOLUME II

STUDY B

IMPACT OF EARLY INTERVENTION AND PL 94-142 ON MAINSTREAMING

Prepared by:

Carol Sacker Weissman
Senior Researcher

Donald Schilley
Researcher

ABSTRACT

STUDY B

Study B examined the impact of early intervention on handicapped children ages 5 to 8 who were enrolled in a BOCES special education school in three different time periods - 1974, 1978 and 1982. They were divided into three comparison groups with different types of early intervention (no preschool, regular preschool, special education preschool) to determine its impact on educational placement in the mainstream continuum - with the least restrictive placement being mainstreamed totally in a local school district. This study also measured the impact of PL 94-142 by comparing the amount and type of mainstreaming before the implementation of PL 94-142 and afterwards.

In summary, these results indicated that though there were differences among handicapped youngsters with specific types of preschool experience (special education preschool, regular preschool and preschool) on parent SES, and age of entry into BOCES special education; type of early intervention appeared to have no impact on the mainstreaming of these handicapped children. Furthermore, when two groups (pre- and post-implementation PL 94-142) were compared to determine the impact of the public law on mainstreaming on the handicapped, no significant differences were found. Yet parents' socioeconomic status, regardless of type of early intervention, seemed to indicate a trend in mainstreaming. The higher the parental socioeconomic level, the more likely

for the youngster to be mainstreamed after the implementation of PL 94-142 than before its implementation.

Since the study was designed to ascertain data from school based records, the youngsters selected for this study were those who had been at BOCES after their preschool years and whose records were thereby housed within the BOCES.

Therefore, one of the reasons why this study may not have found a significant impact of type of early intervention on mainstreaming could have been due to the limitations of this selection process.

The study was designed to look at only those handicapped students 5-8 years of age remaining in the BOCES after their preschool years and then to ascertain the degree of mainstreaming of those students. The study excluded those handicapped students who went directly from a preschool situation into a mainstreamed setting in district.

It may be that early intervention could have an impact on mainstreaming immediately following the preschool experience, which would not have been picked up in this study design. Therefore, results of the study regarding the impact of early intervention on mainstreaming are not conclusive due to the limitations of the school-based sampling design. Further research in this area appears warranted at this time.

TABLE OF CONTENTS

CHAPTER I

INTRODUCTION AND RELATED LITERATURE:
IMPACT OF EARLY INTERVENTION AND PL 94-142 ON MAINSTREAMING 1
STATEMENT OF THE PROBLEM FOR STUDY B 6

CHAPTER II

METHOD 8
Subjects 8
Design 9
Procedure 11

CHAPTER III

RESULTS 13
Research Question 1: Comparison of Children With and Without Early Intervention 13
Research Question 2: The Impact of Early Intervention on Mainstreaming 18
Research Question 3: The Impact of Early Intervention on the Age of Mainstreaming 21
Research Question 4: Impact of PL 94-142 on Mainstreaming 23

CHAPTER IV

DISCUSSION 34
Review of the Research Questions 35
Summary and Conclusions 38

REFERENCES 40

LIST OF TABLES

1 - Means and Standard Deviations of Student Characteristics by Group 13
2 - Analyses of Variance Summary Table of Student Characteristics for the Three Preschool Conditions 14
3 - Chi-Square Analyses Summary Table of Student Characteristics for the Three Preschool Conditions 17
4 - Chi-Square Analyses Summary Table of Preschool Condition for the Two Mainstreamed Placement Conditions 19
5 - Log-Linear Analysis 20
6 - Analysis of Covariance of Age When Mainstreamed for the Three Preschool Conditions 22
7 - Means and Standard Deviations of Student Characteristics by Group (Before PL 94-142 and After PL 94-142) 25
8 - Analysis of Variance Summary Table of Student Characteristics for the Two PL 94-142 Conditions 25
9 - Chi-Square Analyses Summary Table of Students' Characteristics for the Two PL 94-142 Conditions 26
10 - Chi-Square Analyses Summary Table of Before and After PL 94-142 for the Two Mainstreamed Placement Conditions 27
11 - Log-Linear Analysis (Model 1) Time Wave Only 30
12 - Log-Linear Analysis (Model 2) Father's Occupation only 31
13 - Log-Linear Analysis (Model 3) Time Wave and Father's Occupation 33

CHAPTER I

INTRODUCTION AND RELATED LITERATURE: IMPACT OF EARLY INTERVENTION AND PL 94-142 ON MAINSTREAMING

In the middle of the 1960's, the subject of early childhood education received a tremendous amount of attention, especially after the decline of the theory of fixed intelligence, which had dominated the field of developmental psychology since the 1920's. The emphasis since 1961 has shifted to a belief that major psychological developments in language, curiosity, social skills and intelligence occur in children before the age of four. Early studies of socially deprived children showed that deprivation effects were cumulative and the longer the deprivation existed, the more intervention was necessary to correct its effects. From these ideas came thoughts of the value of early intervention as building a solid intellectual foundation and as a preventative for more advanced problems later on in life.

The first research in early intervention dealt mostly with disadvantaged children and the Head Start Program which was developed in the mid-1960's. But a growing concern for children with other handicaps, especially the mentally retarded, led to intervention programs and research efforts that focused on these children. Studies dealing with handicapped children substantiated the belief that early intervention could enable these children to function at a higher intellectual level than was possible without it. It was believed that early intervention for young handicapped children was successful in raising functional levels and thus reduced the need for special class services or even residential placement at older ages. Preschool education was considered to be a preventive program for many children who were prone to need special education (Karnes, 1973).

A study done by Kirk (1958) cited that children who benefited most from early enrichment programs were ones (a) for whom no organic basis could be found for their handicap, and (b) for those for whom their home environments were the most depriving. Data collected on the Syracuse Program (Caldwell & Richmond, 1968) showed a high positive correlation between the extent of the deprivation of the family from which the children came and the extent to which the children responded to the enrichment program. This brought to light important implications for programs for young handicapped children, particularly if concerns revolved around such aspects as inability to learn, difficulties in adjusting to social situations, etc.

Research with both disadvantaged and handicapped children has generally supported the theory of early intervention. Although the early results of the Head Start program did not appear promising, data on the children at a later time showed a significant impact. Also, other studies over the past decade have demonstrated the positive effects of early intervention. In a report by Lazar, Hubbell, Murray, Rosche and Royce (1977), the results of 12 research groups left no doubt that deliberate cognitive curricula had a significant long-term effect on school performance. The studies included an empirical research design of the effectiveness of their respective programs using control groups of children who were drawn in advance from the same population who did not participate in the programs. Results showed that early education did improve the academic performance of low-income and handicapped children. These children were not assigned to special education classes as often as their comparison groups and were retained less often.

Stewart (1981) investigated the relationship between characteristics of 35 preschool handicapped children and their developmental gains in an early intervention program for handicapped children. The specific characteristics that were examined included age at intervention, length of intervention, socioeconomic status, first born as compared to all other ordinal positions in birth, race, one or two children in a family versus three or more, sex, intact home versus broken homes, and severity of handicapping conditions. The developmental areas that were measured included personal-social, gross motor, fine motor, language and cognitive. Low socioeconomic level children made significantly larger gains on gross motor skills than middle to high socioeconomic level children; black children made significantly larger gains than white children on the gross motor, language, and perceptual cognitive subscales; and boys made significantly larger gains than girls on gross motor and fine motor skills. No significant differences were obtained on the relationship of the other characteristics and developmental gain.

There appeared to be a lack of agreement on the most strategic age for intervention with the handicapped, but general consensus seemed to be that the earlier the intervention with handicapped children, the better. In a study conducted by Weikart, Deloris, Lawser and Wiegerink (1970) it was found that preschool children who entered the handicapped preschool program at three years of age made slightly greater gains than those who entered the handicapped program at four years of age.

Karnes, Hodgins and Teska (1969) conducted a study with low-income children functioning in the retarded range (IQ 37-75) with a mean IQ of 66. At the end of one year of preschool intervention, the mean Binet IQ of the group improved to 87.5, a 21-point gain. Of the 15 children in this study, 13 made Binet IQ gains that placed them in the average range of intelligence. Moreover, at the end of the third grade, all of the children in the study had been placed in regular classes.

More evidence supporting early intervention came from Heber and Garber (1970) in an evaluation of the "Milwaukee Project" which provided intervention for children ages 3 to 5. At 42 months of age, the experimental group with intervention had higher IQ scores of 33 points, than the comparable group without intervention.

In summary, one of the major results of early intervention studies of the late 1960's and early 1970's was to heighten the awareness of the public to the advantages of preschool education and to take a hard look at the education of the handicapped in general. The passage of PL 94-142 in 1975, known as the Education For All Handicapped Children Act, was a direct result of this new awareness. This act stated that children with handicapping conditions between the ages of three and 21 must be furnished with education and related services. Pressure was brought to bear on all educational institutions from local districts to nationwide agencies so that conditions of the law would be met. This action not only prompted schools to develop more qualitative programs for the education of the handicapped but also gave renewed attention to early intervention in the form of preschool education.

Since the literature points to the use of early intervention as a valuable tool in the intellectual development of handicapped children and PL 94-142 mandates services for handicapped children beginning at age 3, it appeared to be appropriate that an attempt be made to measure the effects of early intervention on mainstreaming.

Study B examined the impact of early intervention on handicapped children ages 5 to 8 who were enrolled in a BOCES special education school in three different time periods - 1974, 1978 and 1982. They were divided into three comparison groups with different types of early intervention (no preschool, regular preschool, special education preschool) to determine its impact on educational placement in the mainstream continuum - with the least restrictive placement being mainsstreamed totally in a local district. This study also measured the impact of PL 94-142 by comparing the amount and type of mainstreaming before the implementation of PL 94-142 and afterwards.

STATEMENT OF THE PROBLEM FOR STUDY B

The purpose of this study was to investigate the impact of early in-intervention and PL 94-142 on mainstreaming of handicapped children. Although several studies had been conducted in the past two decades dealing with early intervention, there was very little information on its effect on mainstreaming - the ultimate goal of an early intervention program for handicapped children. Furthermore, a paucity of information existed concerning the effects of PL 94-142 on the degree of mainstreaming of the handicapped.

Very little information existed on the characteristics of children who received special education early intervention versus those who did not receive special education until ages 5 to 8. Therefore, the first research question was designed to furnish information on student characteristics.

Educational and psychological theory suggested that early intervention could eliminate many problems of the handicapped and this could reduce the necessity for their placement in special classes. Research with the disadvantaged and children with certain types of handicaps have generally supported this theory. The second research question was designed to study further the impact of early intervention on mainstreaming.

Being mainstreamed at an earlier age is regarded as advantageous to the child and cost-effective for society. Studies have suggested (Grosenick,1971 ; Wing, 1963) that the longer the child remains in a special setting, the less likely it is that the child will want to leave and the more difficult it would be to mainstream the child. The third research question was designed to study the impact of early intervention on the age of mainstreaming.

Lastly, Public Law 94-142 mandated that a handicapped child be placed in the least restrictive educational environment as early as possible in his/her education career. Little research exists to date that documents the impact of PL 94-142 on the degree of mainstreaming of the handicapped. Therefore, the fourth research question examined the impact of PL 94-142 on mainstreaming.

The four research questions posited in this study which deal with the aforementioned issues are stated below.

1. Do handicapped children who receive early intervention (special education at ages 3 or 4) differ from handicapped children who do not receive special education until ages 5 to 8?
2. Are handicapped children who receive early intervention (special education at ages 3 or 4) more likely to be later mainstreamed or placed in a less restrictive setting than handicapped children who do not receive special education until ages 5 through 8?
3. Are handicapped children who receive early intervention (special education at ages 3 or 4) mainstreamed or placed in less restrictive environments by an earlier age than children who do not receive special education until ages 5 through 8?
4. Have more handicapped children in a special education school been mainstreamed to a regular school after PL 94-142 went into effect than before this act?

CHAPTER II

METHOD

Subjects

The 281 subjects (98 females, 183 males) were randomly selected from a total of 575 children who attended the Board of Cooperative Educational Services (BOCES) of Nassau County special education lower elementary school at three different time periods. This BOCES program serves handicapped children ages 5 to 8 with physical, emotional and mental handicaps from all of the 56 school districts in Nassau County. It does not serve the severely mentally retarded, the severely vision or hearing impaired or children with cerebral palsy as other BOCES schools serve these special populations.

The three nonoverlapping time periods selected for this study included the 1974-75 school year, with an enrollment of 220 students, the 1978-79 school year having 160 students and the 1982-83 school year with 195 students. Therefore, the total population available for this study was 575.

The first step in the sampling procedure was to draw a stratified random sample of 300 handicapped children by time period and sex (100 in each time wave, 50 females and 50 males) using a random numbers table. However, some records were not available either because subjects had moved and new addresses were not available or because school districts denied access to these specific student files. Whenever a subject was dropped from the study, another was chosen as a replacement by random sampling until the total available population was exhausted. Finally, it should be noted that the ratio of males to females in the original total population was 3 to 1, the males being predominant.

Therefore, the actual sample consisted of 81 subjects from the 1974-75 time wave, 18 female and 63 male; 100 subjects from the 1978-79 time wave, 34 female and 66 male; and 100 subjects from the 1982-83 time wave, 46 female and 54 male.

Design

The main purpose of Research Question 1 was to determine if there were any significant differences between the characteristics of students with special education preschool versus those with regular preschool experience and those with no early intervention. A comparative group design was utilized; the independent variable was early intervention with three levels (special education preschool, regular preschool, and no early intervention). Descriptive data on students in each time wave (IQ, age, sex, type of handicap, parent SES and family structure) constituted the dependent variables.

The main purpose of Research Question 2 was to determine if handicapped children who received early intervention (special education at ages 3 or 4) were more likely to be later mainstreamed or placed in a less restrictive setting than handicapped children who did not receive special education until ages 5 through 8. This question was addressed by an ex post facto comparison group design that compared students who received special education prior to age 5 (early intervention) versus those students who entered the BOCES between ages 5 and 8 with regular preschool experience and those without any preschool to determine if there were significant differences in later educational placement (mainstreaming).

The independent variable was the same as for Research Question 1, early intervention with three levels. The dependent variable, educational placement in fall of 1983, was coded as follows: (1) mainstreamed, academically and socially; (2) partially mainstreamed, academically for 50% of day, (3) in-district special education - self-contained classes, and (4) BOCES special education program or residential setting.

The main purpose of Research Question 3 was to determine if handicapped children who received early intervention (special education at ages 3 or 4) were mainstreamed or placed in a less restrictive environment by an earlier age than children who did not receive special education until ages 5 through 8. This question was also addressed with an ex post facto comparison group design that compared children who received special education preschool versus those who received regular preschool or no preschool to determine if there were significant differences among the groups regarding age when mainstreamed.

The independent variable was the same as for Research Questions 1 and 2, early intervention with three levels. The dependent variable was age when mainstreamed, defined as leaving the BOCES special education school to attend a regular school.

Research Question 4 asked whether more handicapped children in a special education school were returned to a regular school after PL 94-142 went into effect than before this act. Even though the act was passed in 1975, real implementation did not occur in New York State until 1978. Therefore, the sample used to answer this question was a subsample of the total sample. Youngsters from two time waves were utilized; those enrolled in 1974-75 represented the period before the implementation of PL 94-142; those enrolled in 1978-79 represented the period after the implementation of this act.

The dependent variable was educational placement after three years for each time wave. The educational placement of students in the 1974-75 time wave was examined for 1977 to determine the frequency of mainstreaming over a three-year period before PL 94-142; the educational placement of students in the 1978-79 time wave was examined for 1981 to determine the frequency of mainstreaming over a three-year period after PL 94-142.

Procedure

Lower elementary school class lists from the school years 1974-75, 1978-79 and 1982-83 were obtained and the sample for this study was drawn from these lists as described in the previous section. Computer lists of all students in BOCES schools were then reviewed to determine which children in the sample were still enrolled in BOCES special education programs in school year 1982-83. The next step was to compile a list of student subjects who were not currently enrolled in any BOCES programs. It was assumed that these students had returned to their local school districts.

Letters were then sent to the local school districts from the BOCES Superintendent requesting their cooperation in order to have the BOCES research team review these subject records. In most cases local districts approved the record review and data collection effort contingent on the receipt of parental permission. If the child was no longer in attendance in his/her original home district, district records were examined to determine what school district the child's transcripts were forwarded to and contact was made with the new school. For any student who moved out of the county, every effort was made to locate the student's new school and information was sought by phone or mail. Any subject whose records could not be located was dropped from the study and another subject from the same sex and time period was randomly selected from the total population to replace this subject.

Record review and data collection for students in all three time waves who returned to their local school districts took place in the summer/fall of 1983. Record review and data collection for those students in all three time waves who remained in BOCES programs also took place in the summer/fall 1983.

Each child in the study was assigned a code number. Numbers were placed on a recording form developed by project staff. All data required for the study for both the dependent and independent variables was obtained from the students' records, and was recorded on the data recording forms.

For those students in time wave 1982-83, follow-up regarding educational placement was completed in the fall of 1983. At that time, it was determined whether students in this sample were still enrolled in BOCES or had returned to local districts and their specific type of educational placement or degree of mainstreaming was ascertained.

CHAPTER III

RESULTS

Research Question 1: Comparison of Children With and Without Early Intervention

To determine if handicapped children who received early intervention (special education at ages 3 or 4) differed from handicapped children who did not receive special education until ages 5 through 8 an ex post facto comparison group design was utilized. Students who received no preschool (group 1), regular preschool (group 2), and those who received special education preschool (group 3) were compared to see if differences existed between them on IQ, parent socioeconomic status (SES), family structure, type of handicap, sex, age at entry into BOCES special education programs, and length of time in BOCES school programs. Means and standard deviations for all interval and ordinal data by group are presented in Table I.

TABLE I

MEANS AND STANDARD DEVIATIONS OF STUDENT CHARACTERISTICS BY GROUP
(No Preschool, Regular Preschool and Special Education Preschool)

Variables	No Preschool			Regular Preschool			Special Education Preschool		
	N	X	SD	N	X	SD	N	X	SD
IQ	94	72.53	17.94	54	76.50	20.60	102	69.43	21.66
Parent SES	70	3.31	2.11	44	4.20	2.54	87	4.56	2.13
Age of Entry into BOCES	107	6.61	1.23	62	6.21	1.60	115	5.47	1.37
Length of Time in BOCES (not including preschool)	107	4.25	2.90	62	3.30	2.47	115	4.88	3.65

Separate analyses of variance (ANOVA) were used for all entry interval or ordinal data (IQ, parent SES - measured by father's occupation) and separate chi-square analyses were used for all nominal data (type of handicap, family structure, sex). Results of all separate analyses of variance on the interval and ordinal data are presented in Table II.

TABLE II

ANALYSES OF VARIANCE SUMMARY TABLE OF STUDENT CHARACTERISTICS FOR THE THREE PRESCHOOL CONDITIONS

Variable	Source	df	MS	F
I.Q.	Between Groups	2	894.61	2.214
	Within Groups	247	403.98	
Parent SES (Father's Occupation)	Between Groups	2	30.92	6.264*
	Within Groups	198	4.93	
Age of Entry into BOCES	Between Groups	2	36.76	19.542*
	Within Groups	281	1.98	
Length of Time in BOCES	Between Groups	2	50.31	5.06*
	Within Groups	281	9.90	

* $p < .01$

Results of the analysis of variance regarding parent socioeconomic status (SES), as represented by father's occupation, indicated that significant differences existed among the three comparison groups ($F(2,198) = 6.26$, $p < .01$). In order to determine where differences between these groups existed, a multiple range test - the Scheffe test, was employed. The Scheffe test denoted that a significant difference did exist between group 1 (no early intervention) and group 3 (special education preschool) on parent SES. Children having no early intervention came from families having a lower parental SES (measured by father's occupation) than children who received special education preschool.

Results from the analysis of variance using age at entry into BOCES special education programs as the dependent variable indicated that significant differences existed among the groups ($\underline{F}(2,281)=19.54$, $p<.01$). The Scheffe test denoted that significant differences existed regarding age of entry into BOCES special education between group 3 (special education preschool) and groups 1 and 2 (no preschool and regular preschool). More specifically, children who received special education preschool intervention entered BOCES special education programs eight and a half months earlier than regular preschool children and slightly over one year earlier than children who received no preschool at all.

Results of the analysis of variance using time spent in BOCES special education programs (not including preschool) as the dependent variable indicated that significant differences existed among the groups ($\underline{F}(2,281)=5.06$, $p<.01$). The Scheffe test denoted that significant differences existed between group 2 (regular preschool) and group 3 (special education preschool) on this variable. In this case, children who received special education early intervention stayed in BOCES special education programs nearly one-and-one-half years longer than children who received no early intervention.

Results of all separate chi-square analyses on all nominal data are presented in Table III. To determine if differences existed between the three early intervention groups concerning family structure, a 3 (types of early intervention groups) by 2 (family structure; intact or single parent) chi-square was computed. Results of this chi-square analysis indicated that there were no significant differences between groups regarding family structure (X^2 (2)= .81, $p > .05$).

In order to determine if any differences existed between the three early intervention groups relating to type of handicap, a 3 (types of early intervention groups) by 4 (type of handicap: emotionally disturbed, learning disabled, mentally retarded, multiple handicapped) chi-square was computed. The original set of handicapping conditions consisted of 11 separate categories as follows: 1. Autistic, 2. Emotionally Disturbed, 3. Learning Disabled, 4. Mentally Retarded, 5. Deaf, 6. Hard-of-Hearing, 7. Speech Impaired, 8. Visually Impaired, 9. Orthopedically Handicapped, 10. Other Health Impaired, 11. Multiply Handicapped. These 11 handicapping conditions were reduced to four for this analysis because the majority of the subjects used in the study fell into these four main handicapping categories. The number of students who fell into the remaining seven handicapping classifications were too small to be used in the chi-square analysis and as a result those classifications and subjects were dropped. Results of this chi-square analysis also presented in Table III indicated that there were no significant differences between the three early intervention groups regarding type of handicap ($X^2(6)=12.00$, $p > .05$).

TABLE III

CHI-SQUARE ANALYSES SUMMARY TABLE OF STUDENT CHARACTERISTICS FOR THE THREE PRESCHOOL CONDITIONS

	No Preschool	Regular Preschool	Special Education Preschool	Total
Family Structure				
Intact	73	40	83	196 76.9%
Single Parent	22	15	22	59 23.1%
	95 37.4%	55 21.6%	105 41.2%	255 100%
df=2 $X^2=.81$ $p > .05$				
Type of Handicap				
Emotionally Disturbed	31	11	18	60 29.9%
Learning Disabled	24	13	15	52 23.3%
Mentally Retarded	12	8	14	34 15.2%
Multiple Handicapped	22	15	40	77 34.5%
	89 39.9%	47 21.1%	87 39.07%	233 100%
df=6 $X^2=12.00$ $p > .05$				
Sex				
Male	73	45	73	191 67.3%
Female	34	17	42	98 32.7%
	107 37.7%	62 21.8%	115 40.5%	284 100%
df=2 $X^2=1.58$ $p > .05$				

A 3 by 2 chi-square analysis was performed to determine if differences existed between the three early intervention groups by sex. Results of this chi square analysis also presented in Table III indicated that there were no significant differences between groups related to sex ($X^2(2)=1.58, p > .05$).

Research Question 2: The Impact of Early Intervention on Mainstreaming

To determine if handicapped children who received early intervention (preschool education at ages 3 or 4) were more likely to be later mainstreamed or placed in a less restrictive setting than handicapped children who did not receive special education until ages 5 through 8, an ex post facto comparison group design was utilized. This design compared students who received regular preschool (group 2), and those who received special education preschool (group 3) with those who received no preschool (group 1) to determine if there were significant differences in later educational placement among the groups.

Mainstreaming categories constituted the dependent variable in the analysis of this research question and were coded in the following manner: (1) mainstreamed totally - academically and socially; (2) partially mainstreamed - academically for 50% of the school day; (3) in-district special education - self-contained classes; (4) not mainstreamed - BOCES special education programs or residential setting. Due to the fact that there were fewer than five students in certain of the cells, the mainstreaming placement condition was collapsed into two categories (Regular School District and BOCES or Residential Setting). Therefore a 3 x 2 (preschool condition by mainstreamed placement) chi-square analysis was performed. Results of this chi-square analysis are presented in Table IV. The chi-square statistic is well below the .05 level of significance. Therefore, youngsters with varied preschool experience do not differ significantly regarding educational placement.

TABLE IV

CHI-SQUARE ANALYSES SUMMARY TABLE OF PRESCHOOL CONDITON FOR THE TWO MAINSTREAMED PLACEMENT CONDITIONS

Preschool Experience	Regular School District	BOCES or Residential Setting	Total	
No preschool	20	45	65	33.5%
Regular preschool	13	30	43	22.1%
Special education preschool	18	68	86	44.3%
	51	143	194	
	26.3%	73.7%		100.0%

df = 2 $X^2 = 2.33$ $p > .05$

In addition, a log linear analysis was performed controlling for parent SES, age of entry into BOCES, and time spent in BOCES special education programs (the three variables found to be significant in the analysis of Research Question 1). The log-linear model was used to further the relationships among the categorical variables in multidimensional arrays. The log-linear approach involved a search for the most parsimonious model of variable interactions that adequately fit the data.

Interpretations as to the fit of a model were than made by examination of the chi-square statistic and adjusted residuals.

A log-linear model fitting, presented in Table V, indicated a failure to reject the null hypothesis of complete independence among types of mainstreaming categories; ($X^2(6)=9.27, p > .05$). However, inspection of the adjusted residuals presented in the last column of Table V suggested that the model of complete independence did not adequately predict educational placement in the totally mainstreamed category; the adjusted (standardized) residuals were over ± 2.0 for early intervention groups 2 and 3 (adjusted residuals were 2.39 and -2.50 respectively). Therefore, it appears that having a preschool experience may have an effect on being totally mainstreamed.

TABLE V

LOG-LINEAR ANALYSIS

FACTOR	ADJUSTED RESIDUALS
Mainstreamed Totally	
No Preschool	.61
Regular Preschool	2.39
Special Education Preschool	-2.59
Partially Mainstreamed	
No Preschool	.78
Regular Preschool	-.60
Special Education Preschool	-.24
Self-Contained in District	
No Preschool	-.009
Regular Preschool	-.32
Special Education Preschool	.28
Not Mainstreamed in BOCES or Residential Placement	
No Preschool	-1.006
Regular Preschool	-.66
Special Education Preschool	1.51

$X^2=9.27$, $df=6$, $p > .05$

Research Question 3: The Impact of Early Intervention on the Age of Mainstreaming

To determine if handicapped children who received early intervention (preschool education at ages 3 or 4) were mainstreamed or placed in a less restrictive environment at an earlier age than children who did not receive special education until ages 5 through 8, an ex post facto comparison group design was utilized. Students who received no preschool (group 1), regular preschool (group 2), and those who received special education preschool (group 3) were compared to see if differences existed between them on the age when mainstreamed (left special education school and went to regular school).

A one-way analysis of covariance was employed to determine the effects of preschool experience on the dependent variable, age at mainstreaming, after adjustment for those variables found to be significant in Research Question 1 (parent SES-father's occupation, and age of entry into BOCES special education).

Results of the analysis of covariance are presented in Table VI. As indicated, no significant main effects of preschool experience were found for age when mainstreamed when father's occupation and age at entry into BOCES special education were controlled ($\underline{F}(2,47) = .31$, $p > .05$). Therefore it appears that preschool experience is not related to age at mainstreaming.

TABLE VI

ANALYSIS OF COVARIANCE OF AGE WHEN MAINSTREAMED FOR THE THREE PRESCHOOL CONDITIONS

Source	df	MS	F
Main Effects			
Preschool	2	1.42	.309
Explained	4	15.44	3.363
Residual	46	4.59	

MEANS AND ADJUSTED MEANS

	No Preschool	Regular Preschool	Sp. Education Preschool
Means	10.47	9.60	9.40
Adjusted Means	10.09	9.81	9.19

(F=2,47)= .31, $p > .05$)

Research Question 4: Impact of PL 94-142 on Mainstreaming

To determine if more handicapped children in a special education school had been mainstreamed to a regular school after PL 94-142 went into effect than before the act was implemented, an ex post facto comparison group design was utilized. Even though the act was passed in 1975, real implementation did not occur in New York State until 1978. Students who were 5 to 8 years old in 1974 made up group 1, which included those youngsters enrolled in BOCES special education elementary programs prior to the implementation of PL 94-142. The educational placement of this group of youngsters as of 1977 was used as the dependent measure. This time period (1974-1977)represented the three-year period immediately prior to full implementation.

Students who were 5 to 8 years of age in 1978; group 2 included those youngsters enrolled in BOCES special education elementary programs after the full implementation of PL 94-142. The educational placement of this group of youngsters as of 1981 was used as the dependent measure. This time period (1978-1981) represented the three-year period following full implementation of the law. The educational placements of these groups as of 1977 and 1981 respectively were used to determine the impact of PL 94-142 on mainstreaming.

In order to determine the answer to Research Question 4, a chi-square and log-linear analysis were performed. Prior to implementing the chi-square and log-linear analyses, preliminary analyses of variance and chi-square analyses were conducted in order to determine whether differences existed between the aforementioned groups on each of the variables emanating from the literature, as discussed in Research

Question 1. Means and standard deviations for all entry interval and ordinal data by group are presented in Table VII.

Results of all separate analyses of variance on the interval and ordinal data are presented in Table VIII. As displayed in Table VIII, the results of the analysis of variance indicated that the groups did not differ significantly concerning IQ scores ($F(1,164)=.72, p > .05$), father's education ($F(1,93)=1.74, p > .05$), mother's education ($F(1,108)=2.19, p > .05$) or age of entry into BOCES special education programs ($F(1,183)=.00, p > .05$). Results of the analysis of variance using parent's socioeconomic status (SES) as determined by father's occupation as the dependent variable indicated that the groups did differ significantly on this variable ($F(1,124)=5.61, p > .05$).

Results of all separate chi-square analyses on the nominal data are presented in Table IX. To determine if the two groups (before and after PL 94-142) differed on family structure (intact or single parent) a 2x2 chi-square analysis was performed. As shown in Table IX, there were no significant differences between the two groups concerning family structure ($X^2(1)=.33, p > .05$).

A chi-square analysis was also performed to determine if differences existed between the two groups on handicapping conditions. As in Research Question 1, the handicapping conditions were broken down into four main categories - emotionally disturbed, learning disabled, mentally retarded, and multiply handicapped. The results of this chi-square analysis presented in Table IX indicated that no significant differences existed between the groups on type of handicap ($X^2(3)=5.17, p > .05$).

TABLE VII

MEANS AND STANDARD DEVIATIONS OF STUDENT CHARACTERISTICS BY GROUP (BEFORE PL 94-142 AND AFTER PL 94-142)

Student Characteristics	Before PL 94-142			After PL 94-142		
	N	X	SD	N	X	SD
I.Q.	74	67.95	19.90	92	70.70	21.20
*Father's Education	37	6.54	1.26	58	6.15	1.46
*Mother's Education	42	6.31	1.18	67	5.96	1.24
Age of Entry into BOCES	81	6.19	1.72	104	6.18	1.42
*Parent SES	56	4.45	2.20	70	3.47	2.37

*These variables had ordinal rating ranging from 1-9 for father's and mother's education and 1-7 for parent SES.

TABLE VIII

ANALYSIS OF VARIANCE SUMMARY TABLE OF STUDENT CHARACTERISTICS FOR THE TWO PL 94-142 CONDITIONS

Variable Name	Source	df	MS	F
I.Q. Score	Between Groups	1	310.09	.728
	Within Groups	164	425.75	
Father's Education	Between Groups	1	3.35	1.75
	Within Groups	93	1.92	
Mother's Education	Between Groups	1	3.24	2.20
	Within Groups	107	1.48	
Age of Entry into BOCES	Between Groups	1	.01	.003
	Within Groups	183	2.43	
Parent SES (Father's occupation)	Between Groups	1	29.58	5.614*
	Within Groups	124	5.27	

---

*F(1,124)= 5.61,p ⟨05.

TABLE IX

CHI-SQUARE ANALYSES SUMMARY TABLE OF STUDENTS' CHARACTERISTICS FOR THE TWO PL 94-142 CONDITIONS

	Pre PL 94-142	Post PL 94-142	Totals	
Family Structure				
Intact	63	75	138	85.7%
Single Parent	12	11	23	14.3%
	75	86	161	
	46.6%	53.4%		100%
df=1 $X^2=.34$ $p > .05$				
Type of Handicap				
Emotionally Disturbed	19	22	41	27.2%
Learning Disabled	13	23	36	23.8%
Mentally Retarded	16	9	25	16.6%
Multiple Handicapped	20	29	49	32.5%
	68	83	151	
	45.0%	55.0%		100%
df=3 $X^2=5.17$ $p > .05$				
Preschool Experience				
No Preschool	34	42	76	42.2%
Regular Preschool	11	25	36	20.0%
Special Education Preschool	34	34	68	37.7%
	79	101	180	
	43.8%	56.1%		100%
df=2 $X^2=3.65$ $p > .05$				

Lastly, chi-square analysis was performed on preschool experience of the pre and post PL 94-142 groups to determine if differences existed. Preschool experience was coded as follows: (1) no preschool; (2) regular preschool; (3) special education preschool. Again, as presented in Table IX, there were no significant differences between the two groups concerning preschool experience (X^2 (3) = 5.83) $p > .05$).

In order to determine the impact of PL 94-142 on mainstreaming, a 2 x 2 (mainstreaming condition-BOCES Special Education or Regular School District by Time Wave - Before PL 94-142 or After PL 94-142) was performed. Results of this chi-square analyses are presented in Table X.

TABLE X

CHI-SQUARE ANALYSES SUMMARY TABLE OF BEFORE AND AFTER PL 94-142 FOR THE TWO MAINSTREAMED PLACEMENT CONDITIONS

	Before PL 94-142	After PL 94-142	TOTAL	
BOCES Special Ed.	42	61	103	77.4%
Regular School Dist.	12	18	30	22.5%
Total	54 40.6%	79 59.3%	133	100.0%

df = 1 $X^2 = .03$ $p > .05$

The chi-square statistic is well below the .05 level of significance. Therefore in this analysis PL 94-142 did not impact significantly on the type of mainstreaming placement.

A log-linear analysis controlling for parent SES-father's occupation was then conducted. As was described in the analysis of Research Question 2, log-linear analysis involves the selection of a linear model that adequately fits the data by analyzing the expected versus the observed frequencies. Interpretations as to the goodness of fit of the model can be made by looking at the log-linear chi-square statistic and adjusted residuals.

The variables used in this analysis were as follows: Degree of Mainstreaming (1) Not Mainstreamed - students who remained in BOCES special education programs; (2) Mainstreamed - students who left BOCES and returned to regular school districts. Time Wave (1) Before PL 94-142 students who were 5-8 years old in 1974; (2) After PL 94-142 - students who were 5-8 years old in 1978. Parent SES (father's occupation) (1) Blue Collar Positions - laborer, service worker, operator, and craftsman; (2) White Collar Positions - sales, proprietor, and professional.

The original four mainstreaming categories were collapsed into two categories, as previously described, due to the fact that type of mainstreaming information for the two comparison groups was not available. The original seven occupational categories utilized in previous analyses were collapsed in this analysis into two occupational categories as explicated above. Condensing of categories was employed for this analysis since the numbers of subjects in individual cells would have been so small that statistical interpretation would have been impossible if the entire continuum of categories had been utilized.

As a result of this collapsing of categories, a 2x2x2 chi square schema was envisioned - three variables, each having two dimensions.

In log-linear analysis, as in multiple regression, one seeks to find the simplest model that adequately fits the data. Three models were processed in this log-linear analysis and are presented below. Each model predicted towards mainstreaming from either time wave, father's occupation, or a combination of the two.

The first model attempted to predict mainstreaming category from time wave only. The analysis of this model is presented in Table XI. A log-linear model fitting indicated a failure to reject the null hypothesis of independence among the types of mainstreaming categories regardless of time wave; $X^2(2)=5.81, p > .05$. Inspection of the adjusted residuals, presented in the last column of Table XI suggested that the model of complete independence did not adequately predict mainstreaming in either mainstreaming category since the adjusted residuals were over ± 2.0 for both blue and white collar workers before PL 94-142 implementation. It must be kept in mind that in a residual analysis the closer the adjusted residuals are to zero the better the model fits the data.

The second model attempted to predict mainstreaming category from father's occupation, disregarding time wave. The analysis of this model is presented in Table XII. It can be seen that the log-linear fitting indicated a failure to reject the null hypothesis of complete independence among types of mainstreaming categories based on father's occupation only; $X^2(2)=3.27, p > .05$. However, the X^2 statistic should

TABLE XI

LOG-LINEAR ANALYSIS (MODEL 1)
TIME WAVE ONLY

Factor	Adjusted Residuals
BOCES Special Education	
Before PL 94-142	
Blue Collar (SES)	-2.410
White Collar (SES)	2.410
After PL 94-142	
Blue Collar	-.047
White Collar	.047
Regular School Districts	
Before PL 94-142	
Blue Collar	2.410
White Collar	-2.410
After PL 94-142	
Blue Collar	.047
White Collar	-.047

$X^2=5.81$ df=2 $p > .05$

TABLE XII

LOG-LINEAR ANALYSIS (MODEL 2)
FATHER'S OCCUPATION ONLY

Factor	Adjusted Residuals
BOCES Special Education	
Before PL 94-142	
Blue Collar (SES)	-1.07
White Collar (SES)	1.45
After PL 94-142	
Blue Collar (SES)	1.07
White Collar (SES)	-1.45
Regular School Districts	
Before PL 94-142	
Blue Collar (SES)	1.07
White Collar (SES)	-1.45
After PL 94-142	
Blue Collar (SES)	-1.07
White Collar (SES)	1.45

X^2=3.27 df=2 $p > .05$

not only be nonsignificant but should approach the degrees of freedom of the test. In this case $X^2=3.27$ was much closer to the degrees of freedom (2) than in the analysis of the first model. This was an indication that the second model was a better fit for the data. In fact, by inspecting the adjusted residuals it was evident that they all approached one standard deviation from the mean which indicated a fairly good fit compared to the first model - the furthest outline was ± 1.45.

The third model attempted to predict mainstreaming category from time wave and father's occupation taken together. The analysis of this model is presented in Table XIII. It can be seen that a log-linear fitting indicated a failure to reject the null hypothesis of independence among the mainstreaming categories; $X^2(1)=3.23$, $p > .05$. Inspection of the adjusted residuals in Table XIII suggested that the model of complete independence did not adequately predict any of the mainstreaming categories for either time wave or father's occupation taken together, since all the adjusted residuals were ± 1.79.

In summary, a futher examination through a long-linear analyses suggested that parent SES appears to have an impact on mainstreaming. More children of white collar workers and fewer children of blue collar workers remained in BOCES Special Education than were expected before PL 94-142. After the implementation of PL 94-142, fewer children of white collar workers and more children of blue collar workers remained in BOCES Special Education than would have been expected.

TABLE XIII

LOG-LINEAR ANALYSIS (MODEL 3)
TIME WAVE AND FATHER'S OCCUPATION

Factor	Adjusted Residuals
BOCES Special Education	
Before PL 94-142	
Blue Collar (SES)	-1.79
White Collar (SES)	1.79
After PL 94-142	
Blue Collar (SES)	1.79
White Collar (SES)	-1.79
Regular School Districts	
Before PL 94-142	
Blue Collar (SES)	1.79
White Collar (SES)	-1.79
After PL 94-142	
Blue Collar (SES)	-1.79
White Collar (SES)	1.79

$X^2=3.23$ df=1 $p > .05$

CHAPTER IV

DISCUSSION

One of the major results of early intervention studies of the late 1960's and early 1970's was to heighten the awareness of the public to the advantages of preschool education and to take a hard look at the education of the handicapped in general. The passage of PL 94-142 in 1975 was a direct result of this new awareness. This act stated that children with handicapping conditions between the ages of 3 and 21 must be furnished with education and related services. In addition, it stressed the importance of the least restrictive educational placement for these youngsters.

This present study (B) was an attempt to assess the impact of both early intervention and PL 94-142 on educational placement of the handicapped. The discussion that follows addresses pertinent issues and results of early intervention and the passage of PL 94-142 as they relate to mainstreaming of the handicapped.

Review of the Research Questions

Characteristics of Youngsters Receiving Different Types of Preschool Experiences

Handicapped youngsters with no preschool experience were compared to handicapped youngsters with regular and special education preschool experience across a continuum of characteristics including: IQ, family structure, handicapping condition, sex, father's occupation, age of entry into special education (not including preschool), time in special education program (not including preschool). Results indicated that those youngsters who had been enrolled in special education preschool entered BOCES special education programs at an earlier age than those youngsters who had been enrolled in regular preschool or who had no preschool experience. Furthermore, these same youngsters receiving special education preschool came from families with a higher socioeconomic status (as measured by father's occupation) than those youngsters with regular or no preschool experience. Lastly, this same group of youngsters with special education preschool experience remained in special education programs for a longer period of time than those youngsters with regular or no preschool experience.

It may be that parents of a higher socioeconomic level are better able to negotiate the medical and educational systems for early screening services for their children, thereby availing their youngsters of the most appropriate preschool experience. Furthermore, since special education preschools are more sensitized to the needs of handicapped youngsters and probably have a more direct liaison with special education programs, it appeared more feasible that those children enrolled in special education preschool programs would have a greater likelihood of being placed in special education programs such as BOCES at an earlier age than either those children who received regular preschool intervention or no preschool at all. Moreover, it then followed that since children receiving special education preschool were admitted to BOCES special education programs at an earlier age then their regular and nonpreschool counterparts, that their time in BOCES elementary programs was greater than the other two groups.

In addition, it should be borne in mind that those children with regular preschool experience spent the least time in BOCES elementary school special education programs thereby alluding to the fact that length of stay in special education programs could also be influenced by regular preschool policies. In these regular preschool programs, children usually remain enrolled through age 5. These youngsters may be the less severly handicapped, and it is even possible that identification of handicap was not made until school years.

Impact of Early Intervention on Mainstreaming

The literature inferred that early intervention was a valuable tool in the intellectual development of handicapped children. From this basis, it was expected that early intervention would thereby expedite the mainstreaming of handicapped children. In this study (B), however, no relationship was found between type of early intervention and mainstreaming, though early intervention appeared to have some impact on total mainstreaming of handicapped students in this study. Yet, early intervention did not have an impact on the age of the handicapped youngster when mainstreamed.

Impact of PL 94-142 on Mainstreaming

Since PL 94-142 was a federal law mandating that children with handicapping conditions between the ages of 3 and 21 must be furnished with education and related services, it was expected that more children would have been mainstreamed after the implementation of the law than before. In this study this expectation was not realized.

Regarding the impact of PL 94-142 on mainstreaming, the results of this study did not find a significant impact on handicapped children being mainstreamed. More specifically, it was determined that there were no statistically significant relationships between mainstreaming categories and time waves (before or after Pl 94-142 implementation.

Since an ex post facto comparison group design was used, variables characteristic of the groups were sought. Two comparison groups, one representing the time before PL 94-142 implementation and the other representing the time after implementation, were compared on these descriptive data: family structure, handicapping condition, preschool experience, IQ scores, father's education, mother's education, and age of entry into BOCES special education programs. The only significant characteristic difference noted between the groups was socioeconomic level as determined by father's occupation.

The children who made up the group receiving special education services in a BOCES program before the implementation of PL 94-142 came from homes having a higher socioeconomic status than the group receiving special education services in a BOCES program representing the time after implementation. This may have been the case due to the fact that before PL 94-142 was enacted, fewer educational options were available for handicapped children. Parents with higher socioeconomic backgrounds were probably more aware of the problems of their handicapped children and services available and sought a special education program for their children at the earliest time in their youngsters' schooling career.

Summary and Conclusions

In summary, these results indicated that though there were differences among handicapped youngsters with specific types of preschool experience (special education preschool, regular preschool and no preschool) on parent SES, and age of entry into BOCES special education programs; type of early intervention appeared to have little impact on the mainstreaming of these handicapped children. Yet, early intervention, regardless of type did appear to impact on total mainstreaming of handicapped students. Furthermore, when two groups (pre- and post-implementation PL 94-142) were compared to determine the impact of the public law on mainstreaming of the handicapped, no significant differences were found. Yet parents' socioeconomic status, regardless of type of early intervention, seemed to indicate a trend in mainstreaming. The higher the parental socioeconomic level, the more likely for the youngster to be mainstreamed after the implementation of PL 94-142 than before its implementation.

Since the study was designed to ascertain data from school-based records, the youngsters selected for this study were those who had been at BOCES after their preschool years and whose records were thereby housed within the BOCES. Therefore, one of the reasons this study may not have found a significant impact of type of early intervention on mainstreaming could have been due to the limitations of this selection process.

The study was designed to look at only those handicapped students 5-8 years of age remaining in the BOCES after their preschool years and then to ascertain the degree of mainstreaming of those students. The study excluded those handicapped students who went directly from a preschool situation into a mainstreamed district.

It may be that type of early intervention could have an impact on mainstreaming immediately following the preschool experience, which would not have been picked up in this study design. Therefore, results of the study regarding the impact of early intervention on mainstreaming are not conclusive due to the limitations of the school-based sampling design. Further research in this area appears warranted at this time.

References

Caldwell, B.M., & Richmond, J.B. (1968). The children's center in Syracuse, New York. In L. Dittman (Ed.), Early child care: The new prespectives. New York: Antherton Press.

Grosenick, J.K. (1971). Integration of exceptional children into regular classes: Research and procedure. Focus on Exceptional Children, 3 (5), 1-11.

Heber, R., & Garber, H. (1970). An experiment in the prevention of cultural familial mental retardation. Paper presented at the Second Congress of the International Association for the Scientific Study of Mental Deficiency Warsaw, Poland, September.

Karnes, Merle B. (1973). Not all little wagons are red: The exceptional child's early years. The Council for Exceptional Children. Arlington, Virginia.

Karnes, M. B., Hodgins, A. S., & Teska, J. A. (1969). Earlier intervention: Effects of the ameliorative program initiated with three-year-old children and maintained for two years. In M.B. Karnes, A.S. Hodgins, J.A. Teska, & S. A. Kick (Eds.), Investigation of Classroom and at-home intervention: Research and development program on preschool disadvantaged children. Final Report. (Volume I of III Volumes). Washington, D.C.: Office of Education (DHEW), Bureau of Research.

Kirk, S.A. (1958). Early education of the mentally retarded. Urbana: University of Illinois Press.

Lazar, I., Hubbell, R., Murray, H., Rosche, M. and Royce, J. (1977). The Persistence of research effects: A Long-term following of fourteen infant and preschool experiments. Washington, D.C.: U.S. Government Printing Office.

Stewart, F. (1981). A comparative profile of preschool handicapped Children who profited from early identification and intervention. Paper presented at the Eastern Educational Research Association, Philadelphia, Pa.

Weikert, D.P., Deloria, D.J. Lawser, S.A., & Wiegerink, R.(1970) Longitudal results of the Ypsilanti Perry Preschool project. Report for Project No. 2494, Grant No. OE 4-10-085. Washington, D.C.: Office of Education (DHEW).

Wing, J.K. (1963). Rehabilitation of psychiatric patients. British Journal of Psychiatry, 109, 635-641.